THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. 82. NEW YORK, SATURDAY, MAY 23, 1903. NO. 21.

ORIGINAL ARTICLES.

FRACTURE OF THE SPINE: THREE CASES.*

BY HOWARD J. WILLIAMS, A.M., M.D.,

OF MACON, GEORGIA;

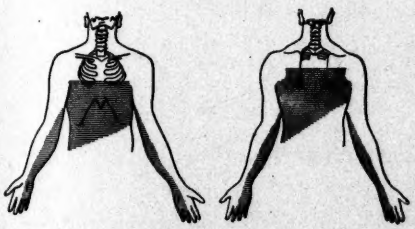
EX-PRESIDENT MEDICAL ASSOCIATION OF GEORGIA, ETC.; SURGEON MACON HOSPITAL, ETC.

THE following cases are reported with no hope of adding anything new to the labors of such neurologists as Thorburn, Starr, Kocher, or Wichmann in the study of spinal localization, nor can I expect to suggest anything in the treatment of these traumatisms beyond a confirmation of the work of such surgeons as Horsley, Keen, Schneede and Lloyd. The three cases simply illustrate the paralytic, anesthetic and reflex inhibitory manifestations attending compressive and destructive lesions of the spinal cord resulting from fracture of the vertebræ located respectively in the cervical, the dorsal, and the lumbar regions. As they were fatal cases, in two laminectomy having been performed, I shall call attention to the errors in their treatment, with the desire that the discussion may bring out suggestions which will be of value in the future management of similar conditions:

Case I.—Fracture of the Sixth Cervical Vertebra; Bilateral Paralysis of the Wrist, Fingers and Intrinsic Hand Muscles, Bilateral Anesthesia of the Inner Border of the Forearm and Ulnar Side of the Hand, and Complete Paraplegia below the Third Rib; Sudden Death in 27 Hours; Post-mortem.

H. J., male, thirty years old, colored, brakeman; fell off a freight train at 4 A.M., June 26, 1900, and was brought to the Macon Hospital two hours later. He had sustained a lacerated wound over the right eye exposing the skull, and

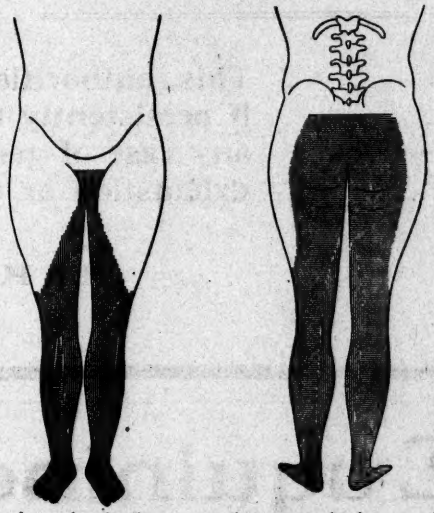
Fig. 1.



Shaded lines, area of anesthesia.

could not move his body or lower extremities. He was unconscious when found, but regained his wits before coming to the hospital. Shock was severe, yet he complained of no pain except when the wound of his forehead was sutured. There was a perceptible though not marked depression of one of the lower cervical spines with slight crepitus on gentle manipulation. Temperature, 97.6° F., pulse 50, respiration 16, on admission. He was placed upon his back on a hard mattress with the head fixed between sand bags; restoratives were employed to promote reaction.

Fig. 2.



Horizontal shading, complete anesthesia, vertical shading, delayed sensation.

Careful examinations conducted during the day revealed total loss of both muscular power and sensory control below the third rib, with a band of hyperesthesia extending around the chest above the rib; and absolute loss of all reflexes below the hyperesthetic band. The breathing was diaphragmatic, the chest muscles taking no part in respiration. Priapism was not observed. Vesicorectal paralysis was present. The pupils were contracted and would not dilate on pinching the sides of the neck. The arms could be moved at the shoulder joints with freedom; the forearms could be flexed and extended on the arms comparatively well, complete extension, however, was imperfect; pronation and supination was slow; flexion of the wrists and fingers was lost, but placing the wrists in the position of extreme flexion the man could extend the hands; there was complete loss of extension of the thumb as well as all use of the smaller hand muscles. Sensation was lost in the ulnar side of the hands, the little, the ring and the inner border of the middle fingers, both palmar and dorsal surfaces, this area of anesthesia extended up the inner border of the forearms and arms to the axillæ with

* Read by title before the Southern Surgical and Gynecological Association, Cincinnati, Ohio, November 12, 1902.

diminished sensation of the anterior surface of the arms (Fig. 1). Tapping the anterior tendons of the forearms caused no flexion of the wrists, and the palmar reflexes were lost; the other reflexes of the arms and forearms were present.

His condition remained practically the same during the night except that the pulse became intermittent and he was restless during the early hours of the second morning. At 7 A.M. he asked the colored orderly in the ward to turn him on his side. After being turned and before the orderly had walked the length of the ward the man ceased breathing.

On post-mortem examination the arch of the sixth cervical vertebra was found to be broken through the pedicle on the left and the lamina on the right side. There was no dislocation or injury of the body of the vertebra. The dura was intact but was red and injected; on opening the membranes only a small quantity of extravasated blood was observed, the hemorrhage not extending above the fifth and only a little below the seventh vertebral region. The spinal cord looked as though it had been pinched completely across by the depressed arch of the broken vertebra, the crushed section not being over half an inch in length, the segments above and below were not mutilated and only slightly injected.

The paraplegia in this case was evidently due to the crushing of the eighth cervical segment of the cord as it lies under the arch of the sixth vertebra. The symptoms were well defined: the area of the cutaneous anesthesia, the distribution of the muscular paralysis and the lost reflexes corresponded accurately with the symptoms enumerated for the eighth segment in Starr's tables for spinal localization. The cause of the fracture was doubtless the fall upon the forehead, in which the lacerated wound over the right eye was received; this sudden backward bending of the neck caught the sixth arch between the spine of the fifth and arch of the seventh vertebra, breaking it and wedging the fragment in upon the cord. The immediate cause of the sudden death was no doubt some interference with the phrenic nerve, when the patient's position was changed, arresting the action of the diaphragm. Park locates the center of control of the diaphragm in the third cervical segment, but the phrenic nerve receives a branch opposite the sixth vertebra and a sudden crush of this branch may cause a reflex interference with the function of the respiratory center.

In the management of this case, I regret that I did not at once fix the neck, head, and shoulders in a plaster-of-Paris dressing. It is possible that in turning the man in bed, the orderly gave the neck such a twist as to have caused the complete severing of a badly compressed and contused cord. I do not doubt that the final result would have been the same, however; nor do I think any operative treatment would have been of material benefit in the case had the patient's life been prolonged; still in the light of recent progress in spinal surgery the possibilities of myelorrhaphy are alluring.

Case II.—Gunshot Fracture of the Fifth Dorsal Vertebra; Complete Transection of the Cord; Paraplegia; Laminectomy; Death on the Ninetieth Day.

W. F., male, twenty-four years old, colored, farm-hand; was shot in the upper dorsal region 10 P.M., December 26, 1901, and lay exposed to a December rain until 6 P.M. of the following day. He stated that he fell and was helpless immediately after being shot, but never became unconscious. He was taken to the Roff Home, and I was requested to see him on the fourth day. Paraplegia, anesthesia, and abolished reflex action was complete below a line extending from the sixth dorsal spine to the ensiform process. Urinary incontinence from overdistention was present, tympany and fecal retention coexisted. Bed sores were beginning on the nates. Pulse 86, respiration 20, temperature 98° F. The ball, 38 caliber, had entered the back 1½ inches to the right of the fourth dorsal spine. The indications were that the cord had been severed, but upon his own solicitation, I operated December 31; ether anesthesia being employed. Dr. J. E. Wright, Dr. H. P. Derry and Dr. H. D. Worsham were the attendants. An incision six inches in length exposed the spines and laminæ from the third to the seventh vertebræ. The lamina of the fifth vertebra was found to have been penetrated by the missile; none of the neighboring vertebræ were injured. The spine of the fourth and arch of the fifth vertebræ were removed. The inner surface of the arch had been destroyed and the bullet was found buried in the body of the vertebra. The cord was completely destroyed for a space of five-eighths of an inch in length. Escape of cerebrospinal fluid occurred after the canal was cleared of blood clot and fragments of bone. A probe passed along the canal detected no obstruction, the wound was therefore irrigated with salt solution and closed with deep, interrupted silkworm sutures without drainage.

The temperature rose during the next twenty-four hours to 101° F., but gradually declined to 99.2° F. on the sixth day. On the twelfth day the stitches were removed, primary union having taken place. The bed sores, in spite of careful attention, grew rapidly worse, covering the entire buttocks and forming later on the posterior surface of the calves of the legs. Soon after the operation the feet began to swell, the swelling gradually extending up into the thighs. The upper part of his body, arms and face emaciated, and by the twenty-third day a severe cough had developed. Strange to say the man's appetite and digestion was at no time affected. The bowels were kept unloaded by salines and enemata. Careful catheterization preserved the bladder from infection until late in the progress of the paralysis, pus making its first appearance in the tenth week. In the seventh week he claimed that he could tell when the bowels would move and thought that he had some control over the bladder. These

statements were confirmed by his attendants, but as there was at no time any evidence of returning muscular power, sensory control, or recovered reflexes below the chest, these signs of improvement must have been imaginary. On March 26, 1902, just three months from the day he was shot and twelve weeks after the laminectomy he died of septic infection.

I was extremely anxious to examine this man's spine after death, but he died while I was temporarily absent from the city and no autopsy was made.

The sixth dorsal segment of the spinal cord resting opposite the fifth dorsal vertebra was the portion of the cord destroyed in this case. The point of interest in the case, just at present, is the prolonged duration of life after complete section of the cord by a gunshot wound. In the references at hand of cases of gunshot wounds of the spine which have come to operation, five in number, three alone were cases of complete section of the cord. One recovered, the case reported by Drs. F. T. Stewart and R. H. Harte, notable because of its being the first recorded case of successful myelorrhaphy in the human being. Case 166, in Dr. Lloyd's references, a complete destruction of the cord, died on the twenty-first day after operation; case 167, of the same references, similar in character, lived thirty-one days. Both of these were in the upper dorsal region. My case lived eighty-six days after operation. Dr. Lloyd and Dr. F. H. Harrington of Pawtucket, R. I., each report a case of gunshot fracture of the spine with compression, successfully treated by removal of the depressed lamina. These two cases, cases of compression without destruction, cannot be classed with those of complete section of the cord, the condition is not so fatal and prompt elevation of the compressing bone successfully reestablishes the functions of the spinal cord.

Although poorly prepared to give the careful attention which such cases require, I am sure that this man's life was prolonged by the extreme care and cleanliness of two ignorant but faithful old negro men, attendants at the Roff Home, the county poor house. It would seem, however, from a careful review of many recorded cases, that while the fatality of spinal injuries decreases from the cervical to the lumbar regions, the upper dorsal region is the most tolerant of injury; that is, the average duration of life after injury is longer in this section of the cord. Perhaps this is due to the protection afforded by the fixity of this location against the disturbances of motion so dangerous in the cervical region, and the protection against wound infection afforded by the distance of the dorsal region from the usual sources of soiling, the escape of urine and feces, and the discharges from bed-sores over the sacrum and nates.

Case III.—Fracture of the First Lumbar Vertebra; Motor Paralysis Below the Great Trochanters, Sensory Paralysis Below the Knees; Laminectomy; Death on the Nineteenth Day.

R. S., male, forty-three years old, Italian, fruit vendor. On October 5, 1900, while attempting to place his fruit-stand on a dray, fell; the stand falling upon his abdomen, the small of his back was crushed against the edge of the curbing. He did not lose consciousness but suffered excruciating pain and could not rise. His family physician, Dr. J. W. Lee, removed him to the Macon Hospital and asked me to take charge of the case.

Shock was severe; temperature, 97.3° F., pulse 76, respiration 24. There was no external wound; but discoloration with bogginess of the soft tissues was present over the dorsolumbar space, and an irregularity of the spines of the vertebræ existed in the upper lumbar region. Girdling pain was felt around the pelvis; complete anesthesia existed over the scrotum, penis, perineum and below the outer condyles of the knees to the toes as well as in the back part of the thighs. Sensation was delayed from the middle of the anterior part of the thighs and inner side of the calves, (Fig. 2). Bilateral paralysis was present in all of the leg and thigh muscles except the psoas group. Cremasteric reflex was present, knee-jerk slow, plantar reflex absent. During the first twelve hours it was found that incontinence of urine and feces existed. Priapism was present.

The patient was placed on his back, extension and counterextension applied and anodyne treatment employed while awaiting developments. During the next two days but little change in his condition occurred. The evening temperature rose to 101° F. with a morning intermission; the urine had a specific gravity of 1.030, and contained albumin and sugar. October 7 he could move his adductors and rotate the thighs slightly; sensation in the outer side of the legs was slowly returning, that of the right leg being most markedly improved. No improvement in the reflexes could be observed. The rectovesical symptoms remained unchanged.

On October 9 bed sores on the nates were starting but the improvement in motion and sensation was such as to justify the belief that the cord was not destroyed and laminectomy was decidedly indicated. Assisted by Dr. N. T. Carswell, Dr. Lee and Dr. H. P. Derry, I operated, ether being employed. An incision beginning at the spine of the eleventh dorsal and ending with that of the fourth lumbar vertebra was made; the soft parts, badly bruised and infiltrated with blood, were separated from either side of the spines and the laminæ exposed. The spine of the twelfth dorsal and the lamina of the first lumbar vertebra were observed to be broken and depressed. The twelfth dorsal, the first and the second lumbar arches were removed. After the usual bleeding was arrested and old clots removed it was seen that the dura was not lacerated but was contused to the extent of an inch and a half or more. The dura began to pulsate as soon as the pressure was removed so it was decided not to open the membranes. There was no dis-

placement or injury of the bodies of the vertebræ. The wound was washed out with hot normal salt solution, and sewed up, drainage being employed; a heavy iodoform gauze dressing with a spinal splint of woven-wire was applied and the patient returned to bed.

Reaction was good; the temperature ranged between 99° F. and 100° F. with a pulse of 88 to 110, for the first few days. The drain was removed on the fourth day, the wound looking healthy. By the eighth day after the operation he could move the thigh muscles, bending the knees slightly and flexing the toes of right foot feebly. He could feel the prick of a pin quite well over the outer side of the right ankle and leg, sensation was delayed in the left calf. Knee-jerk was marked. On the eighth day, feeling an inclination to urinate, he voluntarily passed his urine in the bed greatly to his joy but unfortunately soiling the bedding and his dressings. The next day his temperature rose from normal to 102.4° F. Exposing the wound a dark grumous discharge exuded; the stitches were removed and the wound was washed out. This was followed by a fall of temperature to 98.8° F. After this the wound required daily attention. On the twelfth day he began to be slightly delirious, had some stiffness of the neck with a rise of temperature and pulse. Evidently a septic meningitis had developed. From this time he rapidly grew worse, opisthotonos, wild delirium, convulsions, high pulse and rising temperature came on. He died October 23, 1900. No post mortem was allowed.

Comparing the distribution of the cutaneous anesthesia in this case with the charts of Starr, Wichmann, and Head, it is evident that the involved segment of the cord was the fifth lumbar with some irritation of the fourth; the distribution of complete anesthesia in the case, however, somewhat overlaps the areas outlined by Starr for the sensory distribution of the fifth lumbar segment. The incomplete anesthesia of the inner parts of the legs and the anterior portion of the thighs, the impaired but not lost patellar reflex, with the very early improvement of the muscular control of the adductor group, indicates some degree of compression of the cord above the first lumbar vertebra.

The fatal result in this case is clearly due, in my opinion, to the employment of drainage in the after treatment. The evidence of beginning primary union on the fourth day proved that the wound was in a healthy condition, and had the drain not been employed, the deep parts of the wound would have been sufficiently united to protect the cord from infection by the soiling of the dressings at the time when the patient voluntarily urinated without using the proper utensils for protecting his bedding. Primary union without drainage in the other case and infection in this one convinces me that drainage in such wounds is not only useless but is attended with danger.

In reviewing the recently reported case of successful myelorrhaphy performed by Drs. Stewart and Harte, in which the spinal cord at the seventh dorsal vertebra was completely severed by a pistol ball, I was impressed with the similarity between the conditions present in their case and in two of mine. In their case, there was a separation of three-fourths of an inch between the distal and the proximal ends of the cord without any extensive mutilation of the severed ends and very little hemorrhage or destruction of the bony and membranous coverings of the cord. In my first case, here reported, only one-half an inch of the cord was injured; in Case II the ball cut out a section five-eighths of an inch long; in both the ends of the cord were not mutilated, the hemorrhages were slight and the fractures limited; in Case II, that portion of the membranes traversed by the bullet was alone destroyed, in the other the dura was uninjured. These conditions would seem to be quite essential for the successful performance of the operation. Drs. Stewart and Harte succeeded in bringing the ends of the cord together and suturing them with some little difficulty over the distance of three-fourths of an inch; in my case the approximation, I think, could have been accomplished with less difficulty. My second case would have been an ideal one for the trial of this new operation; and since reading the reports of these operators, the question has suggested itself, would it not be justifiable in a case similar to my first, in which the extent of the destruction is limited but complete, to exsect the mutilated or crushed portion of the cord and approximate the freshened ends with sutures. What might be the results in the cervical segments would of course be extremely problematical; how much manipulation this portion of the cord can endure, and how much loss of tissue it could safely sustain, should resection be performed, no one knows. One feels, however, that there is little hope of successful results from myelorrhaphy so near the great trophic centers high up in the cord, and the risks of paralysis of the phrenic nerve would make the operation an extremely hazardous one. Lower down in the cord the results of this successful case demonstrates the possibilities of the operation and other successes will be reported from time to time. To what extent the cord can be resected and reapproximated with restoration of good functional results will depend, I should think, upon the amount of tension the nervous elements could sustain and still transmit nerve impulses; the tensibility of the cord will, of course, depend upon its looseness in the spinal canal; in this recent case, three-quarters of an inch was lost and the ends reapproximated, still restoration occurred. In the cadaver one inch of the cord has been removed and yet the ends could be stretched and brought together.

Previous to the appearance of the reports of this case, resection of the cord had been experimentally performed on the lower animals but without success: and, as Lloyd says, regeneration of the cord after complete destruction of its

nervous elements was regarded as absolutely hopeless. This case now reopens the question and the surgical world has received a fresh impetus for renewed efforts to overcome these hopeless lesions. Why should not restoration of continuity and renewal of functions follow the approximation and suture of the highly organized cord as well as it follows upon ordinary nerve suture? We read of cases of paralysis cured by simple extension and counterextension in cords compressed by fractured vertebræ; in these cases is it not probable that besides the compression there is also some laceration of the nervous elements? McCosh, Lloyd, and others report cases of successful recoveries after laminectomy in old cases in which, besides the depressed bone, inflammatory changes in the membranes and cord have been found. If these cases are dependent upon compression alone the recoveries should be rapid, but usually the functions are restored by a gradual process. No doubt this gradual improvement is due in part to the regeneration of the injured cord. Fickler, in 1899, published two cases of compression of the cord from caries of the vertebræ, in which he found a number of delicate well constructed nerve-fibers emerging above the point where the compression had been located and returning into the cord below. As the cases had showed marked improvement in the symptoms after the affection had persisted a certain length of time, he accepted them as evidence of a regenerative process on the part of the spinal cord. Bielschowsky has reported a similar discovery in a case of compression of the cord. These cases suggest the conclusion that if the possibility of recovery exists in cords which have gone for a long time unrelieved of compression, new myelin sheaths developing around uninjured axis-cylinders, revivification of nerve-fibers long compressed, and even new fibers forming around points of obstructions, regeneration should take place between the ends of a severed cord when accurately approximated. Chipault speaks of two zones of injury in all crushing traumatisms of the cord, a zone of actual destruction and final necroses of the nerve elements, and a zone above and below the first in which there is injury but not destruction of the nervous elements and in which, after a few days the nerve cells increase in size, their protoplasm becomes granular, the axis-cylinders change and the myelin breaks into segments. This he calls the beginning of degeneration; may it not on the contrary be at first an effort at regeneration, a readjustment of the severed parts aborted finally by the intervening necrosed elements. Lloyd says that if the cause of compression is removed both axis-cylinders and myelin may in a few days begin to undergo regeneration. Is it not possible that the same process may take place if the zone of complete destruction is early removed and the zones of less injured nervous elements are brought together; regeneration then beginning union should take place across the intervening space? This possibility has been probably demonstrated in the case ot Stewart and Harte, if their case is still living.

Instead of waiting for several days to ascertain whether the cord is completely destroyed or simply compressed, I believe we will now operate earlier in all cases of spinal fracture and oftener in the severer cases; knowing that even if the cord is completely crushed, the destroyed zone may be removed and the ends approximated with hope of successful union. Keen's rule that after the accident, if the knee-jerk is absent and remains so, operation is contraindicated, should hold good no longer; the absence of the deep reflexes should now be the most urgent reason for prompt exploratory operation, for it demonstrates that the cord is severed and if possible its continuity should be restored at once. Lloyd's reason for early operation—to antedate the stage of secondary degeneration and take advantage of the possibilities of early regeneration—will apply with equal force to the employment of myelorrhaphy in spinal crushing and to laminectomy in spinal compression. Laminectomy does not materially endanger life nor does it unfavorably affect the course of the case; it will now open the way by which myelorrhaphy may possibly relieve the lesion and perhaps restore the patient to a fairly comfortable life.

BIBLIOGRAPHY.

Park's Surgery, Vol. II, p. 88.
Warren and Gould's International Text-book, Vol. I, p. 814.
Cheyne and Burghard's Surgery, Vol. IV, p. 285.
Raney's Lectures on Nervous Diseases, pp. 741, 744.
Starr, Am. Jour. Medical Sciences, 1886 and 1892.
Lloyd, Jour. Am. Med. Assoc., 1901, and Phila. Med. Jour., 1902.
McCosh, Jour. Am. Med. Asso., 1901.
Stewart and Harte, Phila. Med. Jour., 1902.
Harrington, Am. Jour. Surg. and Gyn., 1902.
Fickler, American Medicine, (Reference), 1902.
Bielschowsky, American Medicine (Reference), 1902.
Sippy, Jour. Am. Med. Asso., 1902.

RHEUMATIC TONSILLITIS IN CHILDREN.*

BY JOHN STEWART, M.D.,
OF PHILADELPHIA.

THIS disease is of both catarrhal and rheumatic origin. It consists of an acute inflammation of the mucous membrane of the tonsils and, although some writers say that the inflammation is confined to the mucous membrane of the tonsil, it has been my experience to see many cases in which the whole of the gland has been involved, at which time it often becomes phlegmonous in type and is quite obstinate. It is characterized by its sudden onset with severe chills and fever, painful deglutition, sometimes a slight cough, an almost constant desire to clear the throat and a peculiar nasal intonation of the voice. There is sometimes hoarseness. The disease may occur at any age, though perhaps it is more frequent in young persons ranging from five to fifteen years of age, whom we are considering in this paper. There are certain individuals, though otherwise healthy, who exhibit a remarkable predisposition to it and this tendency may show itself in several members of the same family. One attack is al-

* Read before the Northwest Medical Society of Philadelphia.

most certain to be followed by others of different intensity. Sometimes years intervene between these attacks while, on the other hand, there may be an interval of only a few weeks. It is nothing new to have a child complain of an attack of muscular or articular rheumatism and especially the latter, while an attack of tonsillitis is at its height. Rheumatic tonsillitis may occur epidemically, especially in the fall of the year, when great atmospheric changes take place. The cause is, of course, principally due to a rheumatic poison in the circulation, although chronically enlarged tonsils are very susceptible to inflammation when there is the slightest rheumatic tendency and the exposure to cold and wet must not be overlooked as a cause.

Symptoms.—Onset sudden with severe chills and fever, thirst due to lessened secretion from the tonsils, which afterward becomes increased, but is of a thick, tenacious character, and by the way, when you are called to see a child with this history you should always look at the throat and many times you will be surprised to see quite an inflammation of the tonsils. It seems peculiar, but true nevertheless, that children about five or six years of age will never complain of the throat, until it is almost an impossibility for them to swallow the saliva which may form in their mouths. There is headache, loss of appetite, coated tongue, bad taste in the mouth, foul breath, painful deglutition and almost constant desire to clear the throat, due to the inflammation which has extended to the uvula. The child will generally lay with the mouth wide open and either try to swallow the secretion or spit it out, which is a very annoying symptom, causing great pain at the angle of the jaw, and many times they complain of earache, which is due to the inflammation extending up the Eustachian tubes to the ear. In severe attacks it is not unusual to see the liquid nourishment forced out through the nostrils when the child makes an effort to swallow. This is due to the muscles of the palate being infiltrated with serum, which greatly interferes with their function. This is sometimes called paralysis of the muscles of the throat. Under normal conditions the contraction of the muscles of the anterior half arches of the palate prevents the return of the food and drink to the mouth, while the contraction of the muscles of the posterior half arches, together with the uvula, closes the passage to the nose, and if the function of these muscles be impaired in any way, fluids will be forced out through the nose or back into the mouth by the contraction of the pharynx in the act of deglutition. (I happen to have experienced this myself about two years ago.) The symptoms are often worse on one side than on the other and about the time that you think convalescence is going to take place, the other side may become involved. These cases may last about a week and a half to two weeks. This just reminds me of the prognosis. When I get a case of rheumatic tonsillitis, I always tell the parents that it will more than likely last for at least seven days and they may not see any signs of relief until about the fifth or sixth day, and in this way you will hold your patient, otherwise you are liable to be discharged about the fifth day and your successor will get the credit for the cure. The attack ends rather abruptly and convalescence lasts but one or two days.

Diagnosis.—Many writers say that it is a matter of no difficulty, when an inspection is made, but I have seen diphtheria and pharyngitis many times taken for tonsillitis. In rheumatic tonsillitis the onset is more sudden than in diphtheria, the temperature is higher and the redness of the throat is more diffuse. In tonsillitis the yellowish-white spots can be removed from the crypts and will disappear in two days, while in diphtheria it continues to reform for one or two weeks. In pharyngitis the whole surface of the pharynx is intensely inflamed, while in rheumatic tonsillitis the inflammation is more confined to the tonsils.

Treatment.—Calomel and saline is first in the treatment of this disease. Salicylic acid or sodii salicylas acts as a specific when given internally in small doses, say one gr. of the acid or about three grs. of the sodii salicylas, given every two hours. This, if given from the onset, will often prevent suppuration, shorten the attack and relieve the pain and swelling. Tr. guaiac ammon, if given in hot milk as a gargle, will often abort an attack and if the case has advanced to about the fifth or sixth day, it will give almost immediate relief. H_2O_2, 25-per-cent. solution, as a swab, will, if continued through the case, afford great relief. And as for Tr. ferric chlor. and potassii chlor., I have not seen very good results, although they seem to be prescribed extensively in these cases throughout the attack. It is not until convalescence that I use Tr. ferric chlor. and then only for a few days, to contract the tissues to their normal size. The diet should be in the shape of gruels, etc. Pellets of ice give relief. If suppuration cannot be averted apply hot applications and as soon as fluctuation can be detected, the abscess should be opened. At times it seems as though nothing gives any relief and at the end of seven days all symptoms of inflammation subside at once.

NOTES ON BLOOD PRESSURE IN MAN.*†

BY S. S. GOLDWATER, M.D.,
OF NEW YORK.

(Continued from Page 931.)

Influence of Posture.—Posture is capable of exercising considerable influence on intravascular pressure. The following figures represent pressures taken with the tonometer—first with the subject lying supine; and then in the vertical position, the hand resting on an ordinary table, approximately 40 cm. below the apex of the heart. Horizontal position: 114 94 111 130 100 105 108

* This essay was awarded the William T. Lusk Memorial Science Prize by the faculty of the University and Bellevue Hospital Medical College, 1901.

† From the University and Bellevue Hospital Medical College.

Vertical position: 132 104 122 148 116 120 124 The average difference is 15 mm.

These figures may be compared with those of Gaetner, whose subjects showed, when lying down, a pressure 10 to 15 mm. less than when sitting. Where, in the sitting posture, the finger at the height of the nipple, the pressure was 105 mm., in the standing posture, the finger on the table 39 cm. below the nipple, pressure was 132 mm. From this experiment Gaertner concludes that a column of blood 36 cm. in height is equal to the difference between 105 and 132 mm. of mercury: or 27 mm. Hg-36 cm. blood. In a similar strain Grebner asserts that a change of position produces of itself no effect on pressure, provided the hand remains at the level of the heart.

Gravity, however, is not the sole factor to be here considered. The cardiovascular system is more than a series of inert containers having unchangeable dimensions. A change of position whether from lying to sitting, from sitting to standing or from lying to standing, is associated with variations in muscular and mental tone which produce reflex alterations in tension through the great nerve centers.

Besides, while gravity may directly cause a rise of arterial pressure in dependent portions of the body when a person who has been lying down rises to his feet, it must be remembered that when this change of position occurs, gravity for the moment favors ventricular systole, as it assists in conveying away from the aorta, where tension is highest, the great mass of blood which goes to the trunk and lower extremities. Hence we find Marey, in his classic work on circulation, declaring that "the vertical position tends to diminish arterial resistance and arterial tension."

In Albert's amputation case the passive raising of the body into the vertical position caused an increase of pressure in the anterior tibial artery, the rise amounting to 40 mm. of mercury. Here the elements of muscular and mental tone were eliminated to an extent which does not obtain in ordinary clinical experiments on conscious subjects. But even under the most favorable circumstances the problem is not reduced to a merely physical basis. The voluntary contraction of muscles which accompanies an ordinary change of position, is capable of materially affecting the nerve centers presiding over cardiovascular action. Furthermore these centers are constantly responding to the blood supply which they receive, and this supply inevitably is affected by important changes in vascular tone in any considerable part of the body from whatever cause.

Practically, however, the clinician can afford to pass over the more abstruse phases of the subject of posture. The practical point is that posture is not to be disregarded and thus inadvertently varied in using the tonometer or sphygmomanometer in any given case. If records are invariably taken with patients in the same posture, no further heed need be paid to the matter clinically, as in that case, whatever may be the finer interrelations between one artery and another, or between the arteries in general and the heart, the same conditions will govern the findings of the apparatus in successive observations.

Muscular Exercise.—We have already seen that the irritation of sensory nerves by muscular contraction is one of the many means by which vascular tension may be enhanced. Where many muscles are continuously exercised, pressure on arterioles, capillaries and veins also comes into the foreground as an element in the production of high tension. Furthermore the mental condition associated with purposive muscular acts is to be kept in mind, as well as changes in the quality of the blood and later alterations in mental tone which arise from prolonged physical exertion.

Broadbent theoretically argues that the effects of exercise on blood-pressure are fugitive, since, owing to the transference of blood from the veins to the arteries by the frequent and powerful cardiac action which accompanies muscular effort, ultimately there occurs an exhaustion of the surplus fluid which constitutes the means by which arterial tension is raised; then the ventricle, although it may act forcibly and frequently, does not receive a full supply of blood during its diastole, and the total amount of fluid in the arterial system cannot further be increased.

But let us inquire again whether the arterial system may be fairly compared, during periods of exertion, to a system of containers of unchanging capacity. Manifestly it can not. So far as cardiac action is separately concerned, it may well be that the effects of exertion are fugitive; but the fact is that cardiac action is here but one of a series of indissolubly associated events, whose combined influence on blood-pressure may be less fugitive than Broadbent assumes.

Records made by the writer before and after a series of half-hour morning walks and before and after stair-climbing, showed invariably in the latter instance, and with a very small percentage of exceptions in the former, a rise of pressure (associated with an increased frequency of pulse) following the exercise periods.

An extensive series of experiments was made by Jellinek, with marching soldiers as subjects. Three measurements were made by Jellinek in each case, the first in the morning before the march was begun; the second a half-hour later during the march, a brief stop being made by each subject only for the purpose of making the required test; and the third, from two to two-and-a-half hours after the beginning of the march. The results varied. In some instances a rise of pressure was recorded; in others there was no material change; and in a third group a fall of tension was observed. In every case the pulse gained in frequency; and the experiments illustrated the possible dissociation of pulse-frequency and intra-vascular tension In other varieties of muscular effort, however, Jellinek found a rise of blood-pressure; and his conclusions conform to those which have been commonly reached by workers in this department.

Marey's teaching was that muscular activity is followed by a diminution of arterial pressure, but more recent writers have almost universally found the reverse to be true under normal conditions. The following may be quoted:

Colombo: Gymnastic exercises (not specified) raise blood-pressure 20 mm.

Zadek: Muscular exercise produces a rise of 10 to 20 mm. Rarely an increase of 30 mm. follows severe exercise.

Grebner: Sixty-five cases showed a rise of pressure in proportion to the severity of the work. A rise occurs promptly at the beginning of muscular work; a tendency to further increase, with periodic remissions, is manifest during a continuance of the work and at its conclusion a sudden fall occurs. Remissions during work are sometimes accompanied by sweating and in these instances the remissions are more marked.

Kornfield: In general, the rise of pressure is in proportion to the amount of muscular effort. The same amount of muscular work in different individuals produces different results.

Jellinek: A rise of pressure in conditions of muscular work is rarely absent. Usually there is a fall of pressure within a few minutes of the conclusion of the work. Old persons with hard arteries show the most marked response to muscular effort.

Weiss: Moderate (not exhausting) bodily labor causes a high pressure.

These rules are especially to be borne in mind in studying the effects of drugs on blood-pressure, and in the treatment of conditions of abnormally high pressure where prompt relief is considered important. To disregard them in the former case would be to leave a loop-hole for the admission of avoidable complications; while in the latter, a failure to take advantage of the effects of rest would be to throw away a powerful ally to successful treatment.

Baths.—The painstaking work of Lehmann, Bain, Schweinberg, Pollak, Jakow and others in relation to the effects of baths on blood-pressure has established data on which the clinician may intelligently base his use of the bath as a therapeutic measure. The chief experimental obstacle in this department is the difficulty of eliminating the several influences of physical motion and of psychical excitement. The results of the experiments that have been made point to a lowering of blood-pressure by warm baths and a raising of pressure by cold baths: but these rules only obtain under proper conditions.

The writer can testify from his own experience that in the case of a healthy person a merely cool bath at 55° to 60° F., extending over only a few minutes, and followed by the slight exercise incidental to the rapid use of a rough towel, will scarcely influence blood-pressure at all. Here the physical exertion in itself would be sufficient to account fully for the average rise of pressure of 3 mm., shown by experiments repeated each morning for a week.

Mosso obtained a fall of pressure amounting to 30 mm. by baths at 40° to 43° C., extending over a period of twenty minutes.

Colombo, by a bath at 50° C. raised the lower limits of pressure from 70 to 100, and the upper limits in this series of cases, from 85 to 110 mm.

Gumprecht's warm baths produced a fall of 40 mm.; and Bain, after spending seven minutes in the hot room of a Turkish bath, where temperature was 39 C., noticed a fall of 45 mm., with a simultaneous increase in pulse frequency from 70 to 120 per minute.

Inasmuch as cold baths decrease the heart's frequency, strengthen its force and raise blood-pressure, it is evident that they are contraindicated in all conditions in which hemorrhage is threatened, as aneurism, atheroma, fatty degeneration and chronic nephritis. Lehmann, on the ground of theoretical considerations and also after clinical observations, recommended their use in "moderate weakening of the heart," by which he meant conditions of valvular disease with low blood-pressure.

In a subsequent section the question of blood-pressure in febrile states will be discussed. Here it will only be stated that in conditions of pyrexia, cold baths seem to have peculiar power to lower blood-pressure.

Massage and Perspiration.—Colombo reports that a rise of blood-pressure, which lasted for fifteen minutes, was produced by massage continued for five minutes over very large cutaneous areas.

It is well known clinically that generous perspiration is promptly followed by a relaxation of arterial tension. In conditions of anxiety a high pressure gives way and falls suddenly as perspiration breaks out (Kornfeld). Similarly, when tears begin to flow pressure falls. In both of these instances, however, psychical complications are present.

Local Pressure Alterations Produced by Aneurisms.—A useful sphere for the diagnostic application of the tonometer is found in certain cases of aneurismal and other tumors, where there is interference with circulation on one side of the body, but where this interference is insufficient to produce a difference perceptible to the touch, between the radial pulse of one side of the body and that of the other. Naturally a number of comparative tests must be made before any conclusion can be reached, as only thus can evanescent influences be eliminated and possible errors in technique set aside.

Efforts have been made to show that there is permanently a difference between right and left radial pressure, but this has by no means been demonstrated. In tests made by the writer on men, women and children, no rule of difference could be established. Hence where a permanent disparity between right and left arterial pressure is found a local cause may properly be sought.

Case I.—J. S., male, age thirty-nine years. History of a supposed chancre fifteen years previously, no secondary symptoms. Left vocal cord paralyzed. Apex extends to left of the left nipple and area of cardiac dulness reaches from this point to a line one-half inch

to right of sternum. Visible pulsation in the second intercostal space, especially on left side, and a less marked area of pulsation on right side at same level. Bruit on left; expansible pulsation with ear applied to chest. Radial pulse scarcely perceptible on left side. The tonometer records were merely of interest as showing the actual difference between left and right arterial tension. Right, 120, 122, 128, 124 mm. Left, 75, 75, 80, 80 mm.

Case II.—John D., male, age forty-eight years. Specific history. Pulsating tumor first noticed two years previously, and now causes considerable forward displacement of the left upper part of the sternum. Three students were asked to compare the radial pulse of the left side with that of the right, and failed to detect any discrepancy. With the tonometer the following was shown: Right, 132, 130, 132 mm. Left, 105, 106, 102 mm.

Case III.—John G., age fifty-three. History of this case lacking. High tension pulse; urinary analysis negative; slight dilatation of the right pupil. The apex beat was located three-fourths of an inch left of the left nipple, and a systolic apical murmur was present, transmitted to the left. Liver and spleen both enlarged. Tonometer: Right, 240, 245, 242 mm. Left, 205, 205, 211 mm.

This case was doubly interesting inasmuch as it exhibited on the right side the highest tension found in the whole range of the writer's experiments and next to the highest pressure recorded in any published case.

Arteriosclerosis.—Arteriosclerosis was one of the first subjects to attract the attention of experimenters at the time of the introduction of the earlier instruments for ascertaining blood-pressure in man. A large part of the work done in the fertile period between 1880 and 1887 was limited to this field, and since von Basch's summing-up of European records made by means of the sphygmomanometer prior to 1887, no material addition has been to our knowledge of the intravascular conditions which prevail in sclerosis of the arterial system.

That extremely low as well as high tension may exist within sclerotic vessels, is illustrated by the following cases:

Case I.—Lainger, male, age fifty-two years. No appreciable radial pulse. Apparently radial arteries fail to expand, but they may be felt below a point where the pulse is obliterated by pressure, as extremely firm and resistant cords. The patient complains chiefly of shortness of breath and vague thoracic pain. For two weeks prior to examination had been resting in the ward, receiving during this period strychnine, 1/30 gr., t. i. d. Pulse, 112; rather weak. Tonometer: 80, 82, 80 mm.

Case II.—Hefter, male, age sixty-three years. Arteriosclerosis, associated with renal disease. On admission to the hospital urinalysis showed albumin 50 per cent. by bulk, but this had been gradually reduced under treatment to a mere trace. Heart sounds strong, the second accentuated; systolic murmur at apex with slight transmission to left. Tonometer, 174, 162, 160 mm. These measurements were made on successive afternoons; a week after the last interview, notwithstanding the reduction in the amount of albumen in the urine and the apparent gradual approach by the patient to a condition of comfort, a fatal convulsion occurred.

Case III.—Harvey, male, age fifty-six years. Negative history, except as to laborious occupation, which was considered cause of an extreme enlargement of the heart; the apex beat was found on the lower confines of the sixth space, and cardiac systole seemed to lift the entire anterior wall of the chest. No murmurs. The patient related symptoms of an acute dilatation repeated four times in three years. His last attack brought him into the hospital two weeks before the first application of the tonometer to the case. Intense edema of the lower extremities had gradually disappeared under the administration, in the hospital, of diuretin, jalap, glonoin. A pulse of 144 was recorded when the patient entered the hospital; examination of the chest showed that the cardiac frequency was still almost as great as this, but at the wrist appreciable pulsations had diminished to 60, 50, 48, 54, and were decidedly irregular. The radial arteries, after partial obliteration of the pulse by compression, were extremely hard to the touch, and were punctuated along their course by distinct nodular elevations, which could be felt wherever the artery was accessible. Tonometer, 140, 138, 144 mm.

Too frequently, in clinical practice, a physician will make a diagnosis of arteriosclerosis because a pulse presents the characteristics of high tension. The fact that the pulse is difficult to obliterate by pressure which is made properly in a favorable location, indicates high arterial tension, but is by no means an indication that an artery is sclerosed.

Osler says that "it may be difficult to estimate how much of the hardness and firmness is due to tension of the blood within the vessel and how much to the thickening." It would be well to add that when blood is flowing through a sclerotic artery, the proportion of resistance due to thickening of the arterial wall is such an extremely small part of the total resistance, that practically it may be disregarded. By the sphygmomanometer radial tension in a normal individual is frequently found to be as high as 130, 140 or even 150 mm. of mercury. This is the resistance which opposes an attempt to annihilate the pulse-wave by pressure. Now, von Basch has shown that normal arteries of good size taken in a fresh condition from the human subject, will not fall together when empty, but will yield to a pressure of 1 mm. of mercury; and in empty sclerotic arteries, where the pathological change is of an advanced grade, a pressure of 5 mm. suffices to obliterate the lumen. Thus it appears that the total difference in resistance due to arteriosclerosis is equal to 4 mm. of mercury—a negligible fraction of a total resistance which is likely to run up to or beyond 150 mm. in cases in which the diagnosis of sclerosis is attempted by the touch. Where distinct nodules can be felt along the course of a vessel the recognition of its condition is easy; but here the sensation of roughness, not mere lateral resistance, is the informing agency.

Osler, however, very properly instructs his readers, that, in the attempt to diagnose arteriosclerosis by digital examination, one must first compress the artery and must then palpate below the point of obliteration of the pulse. By this manipulation the proportions of resistance are

entirely changed, because blood-pressure has been at least partially excluded below the point of compression. In the case of an empty artery the task is to detect by the touch the difference between a resistance of 1 mm. and one of 5 mm., allowance being made in the living subject for the resistance offered by the intervening tissues.

Digital examination fails utterly to reveal arteriosclerosis in those cases in which there exists sclerosis of the smallest arteries, but in which the larger, palpable vessels are not appreciably changed. Blood-pressure apparatus will not overcome this obstacle to diagnosis; but it will furnish an excellent check on a physical examination conducted according to the formerly prevailing methods. Successive tests will reveal in graphic form the gradual rise of tensión in what has been called the "presclerotic" stage, and frequently will indicate, long before the palpable arteries are noticeably altered, the need for measures to reduce the strain on the long-suffering vascular system. Without the information furnished by the tonometer these cases ordinarily would be diagnosticated, according to the predominant symptoms in each case, as indigestion, neurasthenia, insomnia, etc., and treated accordingly.

Reverting to the statement already made, that extremely low as well as quite high tension may exist in sclerotic vessels, one may say that in general terms these phenomena are dependent on the condition of the heart. Where a hypertrophied heart overcomes the resistance of rigid arteries, pressure is, so far, high; where weakening myocardial changes have occurred, whether of the nature of valvular insufficiency or of degeneration, pressure is low.

Nephritis.—The value of supplementing ordinary methods of clinical examination by the use of the tonometer is nowhere more apparent than renal disease, and indeed in all those conditions in which the excretory organs are failing to perform properly their functions. In the discussion of the blood-pressure of pregnancy a case was cited in which the accidental discovery of unusually high arterial tension was the first indication given of a serious renal complication. The tonometer in this instance recorded a pressure of 185 mm., a degree of tension by no means uncommon in chronic disease of the kidney.

The highest pressure found by the present writer in any case of albuminuria was 205 mm. In this case there were no convulsions up to the time the patient passed from observation:

Case McGill, male, age thirty-five years. Urinary analysis, August 18, showed 30 per cent. of albumin (volumetric test). Hyaline and granular casts were present. Repeated examinations of the urine from July 2 up to the date just mentioned showed albumin constantly present, and always more than a trace. Tonometer: August 19, 195 mm.; August 20, 205 mm.

The highest pressure revealed by the tonometer in any published case is that of a woman of twenty-two, whom Weiss saw, and whose history includes an account of albumin and casts. Here uremic convulsions finally set in after pressure had been for several days as follows: 280, 245, 245, 255 mm.

In nine cases of chronic nephritis studied by the present writer, the average pressure was 171 mm.

Abundant researches have well-nigh exhausted this phase of the subject of blood-pressure, and have established as an almost invariable rule the presence of high arterial tension in cases of nephritis. Nevertheless, to go so far as to assert—as did a recent contributor to a New York medical journal—that "the tonometer may render a diagnosis of chronic nephritis without a microscopical examination of the urine," is to disregard a number of pathological conditions which present, so far as the tonometer is concerned, phenomena indistinguishable from nephritis.

Christeller explains an absence of high tension in exceptional cases of chronic nephritis by saying that in such cases there is not present cardiac hypertrophy or arteriosclerosis. This, however, ignores the fact that independently of cardiac overgrowth and of changes in the arterial walls, or rather, prior to the development of these structural alterations, imperfect excretion may produce a rise of tension by causing to be retained in the blood products of metabolism which excite capillary resistance, possibly by increasing cohesion between the blood and the capillary walls.

Many substances, when injected into the circulation, will promptly increase blood-pressure in a manner not explainable either by increased cardiac action or organic vascular changes, and in fact, entirely aside even from all nervous vasomotor control, as has been shown experimentally. On this theory rests (in part only, for nervous influences cannot clinically be excluded by division of nerves) the explanation of the "presclerotic" stage of high tension already referred to. Along these lines also Federn's "prearthritic" high-tension is to be explained. Federn maintains that if pressure can be lowered in certain cases, muscular, fascial and joint pains can be banished and the threatened development of arthritis in young persons subject to such pains, can be averted.

The eliminative and prophylactic treatment indicated in cases of accumulation of waste products, would include a reduction in animal food, a reduction or entire cutting-off of alcohol, the free use of water and the purgative use of mercury. Common practice would suggest the use of nitrites as an auxiliary measure, but this is largely symptomatic treatment, dealing with the condition of high tension itself and not with its cause, except in so far as nitrites are diuretic and diaphoretic.

Effects of the Nitrites.—The effects of the administration of nitroglycerin in $^1/_{100}$ minim doses four times a day, were studied in a patient having normal kidneys.

Case A.—Haslitt, male, age twenty-eight years. August 7, pulse 90, regular, tonometer, 145 mm.;

August 14, pulse 86, regular, tonometer, 142 mm.; August 26, pulse 95, irregular in rhythm and force, tonometer, 135 mm. In the interval between these examinations the patient took four times a day, one minim of spirits of glonoin. A history of attacks of palpitation had been given, and the patient was instructed to rest as much as possible. As a result of this combined treatment, there occurred in nineteen days a fall of pressure amounting to only 10 mm. This slight fall of pressure might reasonably be attributed to the unusually quiet life led by the patient, or might even have been due to accidental causes. The effect of the glonoin, which was administered, is not apparent.

Case B.—Whalen, male, age twenty years, laborer. Heart forcible and regular. No history bearing on blood-pressure. July 26, pulse 80, ($^1/_{100}$ m. nitroglycerin four times a day), tonometer, 127 mm.; July 28, pulse 74, (nitroglycerin continued), 124 mm.; July 30, pulse 76, 137. Patient rested for an hour before the first examination, but walked two miles before the third. Again the drug used fails to show any satisfactory evidence of its ability to control arterial tension.

These are usual results of the use of nitroglycerin in dispensary practice. No doubt better results are obtained in hospitals and wherever rest and other agents are combined with the drug. But how far the drug is responsible for effects produced by the combined treatment, it would be difficult to say.

Thorne, in his article on the relation between high tension and nervous diseases, expresses his conviction that sodium nitrite has the power to banish headaches, in some instances, through its action on the vascular system. Thorne suffered from such headaches for some time, and sought relief in vain until he attacked in this manner his high-tension pulse. To the persistent use of sodium nitrite in one grain doses he attributes a lowering of his usual pressure, recorded at midnight, from 170 mm. to 130 mm.; and simultaneously with this arterial relaxation his headaches disappeared.

One would like to be able to examine in greater detail the daily life of the subject of Thorne's experiments before accepting his record as conclusive evidence of the potency of the drug. When Thorne tells of a headache occurring at night, blood-pressure at the time being 170 mm., and attributes to two grains of sodium nitrite the absence of the headache in the morning and a fall of blood-pressure to 122 mm., is it not pertinent to point out that in the foregoing chart "A" in the present article, showing pressure variations independently of the use of drugs, nine hours' sleep was able to bring about a fall of tension from 170 to 108 mm.?

Organic Heart Disease.—It cannot be maintained that as yet any material result has been achieved by the study of the relations between blood-pressure and valvular disease.

Frequent and forcible cardiac contraction is recognized as one of the chief elements in the production of a high-tension pulse: and hence it is very easy to say that in valvular disease tension is high in proportion to the degree of compensatory hypertrophy, and that in uncompensated lesions pressure is low. But there has been no satisfactory experimental demonstation of such a rule.

The following represents a series of cases of mitral insufficiency, only one of which (No. VIII) was associated with pronounced aortic lesion.

CASE	SEX	AGE	PULSE	TONOMETER
I	Male	17	92	102 mm.
II	Male	40	80	128, 128 mm.
III	Male	31	82	106, 103 mm.
IV	Female	39	107	96, 100 mm.
V	Female	26	106	110 mm.
VI	Female	29	84	105, 108 mm.
VII	Male	31	78	80 mm.
VIII	Male	75	76	148, 138, 136 mm.
IX	Male	19	72	105 mm.
X	Female	40	68	99, 95 mm.

In none of these cases were there severe symptoms of loss of compensation. Dyspnea of effort was present, and in most cases occasional attacks of palpitation. Marked acceleration of the pulse was exceptional rather than the rule. The pressures shown by the tonometer do not, except in cases No. II and VIII, depart far from the lower limits of normal. In Case VIII alone is anything like high pressure observed, and here there existed not alone mitral regurgitation but a double lesion of the aortic valve, and a heart whose apex was found in the sixth intercostal space. The remaining cases of the series did not show marked cardiac enlargement. These cases are presented merely as an illustration of what the tonometer shows in the milder grades of mitral regurgitation.

Long before the introduction of the tonometer, von Basch asserted that in cases of exceptionally good compensation pressure is sometimes low, while pronounced disturbance of compensation often coexists with persistent high tension; and this is easily explained by the many variable factors that modify arterial tension. Neither in valvular disease nor in cases of suspected degeneration of the cardiac muscle can strict inferences as to the cardiac condition be drawn from the amount of pressure found in the systemic vessels.

In connection with aortic insufficiency it should be noted that the pressure recorded by the tonometer is the maximum systolic pressure, which in this condition bears a peculiar relation to diastolic pressure, the difference between the maximum and minimum pressures being much greater than in other cardiac states.

An interesting case of aortic regurgitation was observed by the writer in Bellevue Hospital.

Case AA.—Mrs. McG., age thirty-five years. The patient made her appearance at the dispensary for the first time on July 28, suffering from acute dyspnea. She complained of persistent insomnia. Her heart was slightly enlarged, and a loud diastolic aortic murmur was heard. At this time the patient's pulse was 92 and regular; tonometer, 95, 98 mm. The patient's condition grew steadily worse, and on August 11 she consented to enter the hospital. At this time pulse frequency was 96; tonometer, 90, 92 mm. The patient was put to bed, receiving occasional doses of codeine

for her insomnia and pain, and sodium salicylate* t. i. d. Her dyspnea had practically disappeared when the writer visited her again on August 22, and the tonometer now recorded 125, 124 mm.

Interesting as such a case is, its satisfactory interpretation is extremely difficult. Some of the influences at work were the change from household activity to rest in bed; the acquisition of a hopeful mental tone consequent upon the patient's steady improvement from the day of her entrance into the hospital; a modified diet; increase of sleep, which must be regarded as cause as well as effect of altered arterial tone, and medication.

Blood-Presure in Nervous and Mental Disorders.—Passing over to the domain of nervous diseases, it is to be noted, in the first place, that the vascular system of individuals of neurotic habit is much more easily impressed by mental causes than is the vascular system of normal persons. In the ordinary use of the tonometer it frequently happens that on account of the excitement due to the novelty of the experience, the pressure obtained on the first application of the instrument is somewhat higher than that obtained in succeeding applications. In excitable persons this initial rise of pressure may be 20 to 30 mm. On the other hand the excitement may result for the moment in marked cardiac depression. On one occasion an ignorant and nervous woman, who could not be convinced that the tonometer was harmless, fainted away when the pneumatic ring was applied to her finger.

It is said by Heim that the presence of a neurosis in children can often be determined by blood-pressure apparatus. He finds that in children who are constantly in a state of relative excitement and who suffer from headache, nausea, vomiting, dizziness and fainting spells without discoverable cause, blood-pressure is considerably above normal. In normal children, the tonometer records a pressure of from 75 to 95 mm., considerably less than in the adult. In neuropathic children one finds a pressure of 130 to 150 mm. The diagnostic value of this difference is as follows: In any individual case the tonometer cannot determine the character of the neurosis; but where children present themselves with the symptoms just described and no cause, such as anemia, refractive errors, etc., can be discovered, the tonometer will determine whether or not the case is neuropathic. If normal blood-pressure is found, the case does not belong to this class, and further search must be instituted for the cause of the symptoms. Heim's work on the vascular conditions characteristic of children is unique, and his results need to be confirmed by other investigators.

In curious contrast with the high tension which according to Heim is associated in sane but neurotic individuals with hyperexcitation of the nervous system, is the law laid down by Craig with reference to blood-pressure in various forms of insanity. Craig states that in insanity blood-pressure bears an inverse relation to the degree of excitement shown. In simple melancholia and in depressed forms of insanity generally, arterial tension is high; in agitated melancholia, where there is considerable motor excitement, it varies; while in acute mania it is below normal during excitement, rising to normal when the excitement has passed away.

In patients suffering from depression, a slight improvement was noticed by Craig after the administration of nitroglycerine. Of similar import is the testimony of Thorne, who in certain forms of mental disease endeavors to lower tension by keeping the bowels open, by giving artificial Nauheim baths and by the use of potassium iodide in small doses, as well as by the administration of sodium nitrite.

Kornfeld, whose work concerns itself especially with circulatory phenomena during sleep, found arterial tone to be above normal, during sleep, in epileptics and in the insane.

Blood-Pressure During Fever.—It seems impossible as yet to accept any of the pronounced views advocated by those who have endeavored to make clear the effect of febrile temperatures on arterial tension. The conclusions of experimenters seem to represent every possible shade of opinion. Thus we have Federn declaring that in scarlet fever a rise of blood-pressure may be accepted as a diagnostic sign, because in no other fever except malaria does a rise of temperature influence blood-pressure in the slightest degree. Zadek, who made a special study of intermittent fever, agrees with Federn as to the association, in this disease, of a rise of a temperature with a rise of pressure. In the typhoid cases of Alesois and Francois, febrile states otherwise similar in character failed to show any uniformity in blood-pressure. Lebedoff, who studied puerperal fever, thought that he established a direct relationship between temperature and pulse-frequency, on the one hand, and arterial tension on the other; but he weakens his case so far as temperature is concerned by admitting that after the disappearance of fever, blood-pressure continues high if pulse-frequency does not promptly abate. Von Basch accepts the theory that fever causes a rise of pressure by direct action of the temperature on the vascular centers. And finally Wetzel, who succeeded rather better than any one else in excluding conflicting elements, found that in the course of a brief, uncomplicated fever, the lowest pressure invariably corresponded with the highest temperature. Here, then is a pretty knot which the clinician must unravel before he can hope to apply to the treatment of febrile disorders his knowledge of the laws of arterial tension.

Wetzel's observations, to which allusion has just been made, were confined to febrile attacks of brief duration, free from complications and not capable of materially influencing the general strength of the patient. It is apparent that in long-continued fevers one has to do with such complications as a weak heart, lessened food supply and consequent lack of nutrition, changes in

* Mariagliano has shown experimentally that salicylate of soda in single medicinal doses, is capable of raising blood-pressure from 5 to 10 mm., this effect lasting from eight to ten hours.

the circulating fluid resulting in exaltation or depression of the cardiac and vasomotor centers. Other complications that come into play are increase of capillary resistance, loss of vascular tone due to weakness of the muscular coat, constipation or diarrhea; and in special forms of fever we have pulmonary obstruction, persistent cough, muscular spasm, venous stasis, increased frequency of respiration, pain, insomnia, vomiting, profuse perspiration. Many of these conditions are present in brief fevers, but their influence is relatively unimportant.

The fevers which Wetzel regards as furnishing the best opportunity for the study of the relations between temperature and blood-pressure are (uncomplicated cases of) acute gastritis, diphtheritis, acute rheumatism, typhoid, erysipelas. On account of the profuse sweats and the profound alteration in the blood, occurring in acute rheumatism it would be wiser to exclude this disease from the list. Influenza might be added were it not for the fact that in this disease cardiac weakness is usually out of proportion to the intensity of the fever. Indeed, there is no fever which can be regarded as "uncomplicated" from the standpoint of blood-pressure experiments; the best that can be done is to study cases in which the complicating factors are as few and as insignificant as possible.

An unfortunate circumstance is the practical impossibility of collecting any large series of cases in which blood-pressure can be carefully studied before as well as during and after fever. In rare circumstances this may be done; but as yet the literature of blood-pressure presents no record of this sort.

After having discussed at such length the obstacles which tend to confound us in this phase of the study of blood-pressure it is pleasant to be able to recognize at least one distinct service which blood-pressure apparatus has done. It has proved that arterial tension may be extremely low during the early stage of high fevers, when the pulse is full and bounding; relaxation of the arterial walls is no doubt the cause. A question which suggests itself is whether treatment having in view a better control of the circulatory apparatus during this period, might not prove of some benefit.

Finally a word in relation to the period of convalescence. The clinician must not be surprised to find abnormalities of pressure during this stage; blood-pressure is at this time as sensitive and changeable as the frequency of the pulse, and may rise or fall 20 or 30 mm. in the course of an hour without apparent cause.

BIBLIOGRAPHY.

Arnheim.—Ueber den Sphygmomanometer; St. Petersburg med. Woch., 1880.

Alezais et Franzois.—La Tension Arterielle dans la fievre typhoide; Revue de méd., 1899, No. 2.

Albert, A.—Einige kymographische Messungen am Menschen; Medicin. Jahrbücher, 1863.

Bain, W.—The Effect of Baths, Massage and Exercise on Blood Pressure; The Lancet, June 10, 1899.

Bloch, M. A.—Nouveau Sphygomomètre: Comptes rendus de la Société de Biologie, 1888.

Bradbury, J. A.—Some Points Connected with Sleep and Hypnotics; The Lancet, July 8, 1899.

von Basch.—Blutdruckmessungen an Gesunden und Kranken; Zeitschrift f. klin. Med., 1881.

von Basch.—Berliner klin. Wochenschr., 1887, p. 179.

Broadbent.—The Pulse, Chap. IX.

Craig, M.—Blood Pressure in the Insane; The Lancet, June 21, 1898.

Christeller.—Blutdruckmessungen am Menschen unter pathologischen Verhalt.; Zeitschrift f. klin. Med., 1881.

Eckert, A.—Blutdruckmessungen in Kindern; St. Petersburg Vratch., 1882.

von Frey.—Chirurgische Beiträge; Festschrift für Benno Schmidt; Leipsic, 1896.

von Frey.—Untersuchungen des Pulses; 1892.

Foster.—Physiology. Vol. I.

Federn.—Blutdruck und Darmatomie, 1894.

Federn.—Ueber Blutdruckmessungen am Krankenbett; Wiener med. Wochenschr., No. 51, 1896.

Fallot.—Rapport du pouls et de la température dans la fievre typhoide;; Marseilles Médical, 1886, p. 389.

Fraenkel.—Berlin Medical Society, Meeting Dec. 13, 1900.

Gaertner.—Ueber einen neuen Blutdruckmesser; Wiener med. Wochenschr., No. 30, 1899.

Grebner.—Wiener med. Blätter, No. 45, 1899.

Gumprecht.—Klin. Blutdruckmessungen mit dem Riva-Rocci'schen Sphygmomanometer; Zeitschr. f. klin. Med., 1900.

Heim.—Blood Pressure in Neuropathic Children; Deutsche med. Wochenschr., May 17, 1900.

Hill, Leonard.—On Rest, Sleep and Work, etc.; The Lancet, Jan. 29, 1898.

Hill and Barnard.—The Influence of Gravity on the Circulation; Journal of Physiology, XXI, 1897, p. 323.

Hill and Barnard.—A Simple Pocket Sphygomanometer; Journal of Physiology, 1898. (Report of Proceedings of Physiological Society).

Hill, Barnard and Sequeira.—Effect of Venous Pressure on the Pulse; Journal of Physiology. Vol. XXI, 1897, p. 147.

Haushalter et Prantois.—Quelques applications cliniques du Sphygmomanomètre de Potain; Marseille médical, 1886, p. 389.

Hürthle.—Ueber Methode zur Registrirung des arteriellen Blutdrucks; Deutsche med. Wochenschr., 1896, No. 36.

Jellinek.—Blutdruck des gesunden Menschen; Zeitschr. f. klin. Med., 1900, p. 447.

Kornfeld.—Ueber den Einfluss physischer Arbeit auf den Blutdruck; Wiener med. Blätter, 1899, No. 30.

Kornfeld.—Erfahrungen über Trional als Schlafmittel; Wiener med. Blätter, 1898, No. 13.

Kiesow.—Expériences avec le Sphygmomanomètre de Mosso; Arch. italiennes de biol., XXIII, 1895.

Koniyama.—Einfluss heisser Bäder auf den Blutdruck; Münch. Annalen, 1899.

Knoll.—Ueber Wechselbeziehungen zwischen den Druckverhältnissen in den Arterien und Venen; Archiv f. die ges. Physiologie, 1898, Bd. 73.

Kapsamer.—Wiener klin. Wochenschr., No. 51, 1899.

Lebedoff and Poroch.—Blutdruck während Geburt und des Wochenbett; Centralblatt f. Gyn., 1884.

Lehmann.—Blutdruck nach Bäder; Zeitschr. für klin. Med., Bd. VI, 1883.

Mariagliano.—Effects of Sodium Salicylate on Circulation; Zeitschr. f. klin. Med., VIII, 1884.

Mosso.—Sphygmomanomètre pour mésurer la pression du sang chez l'homme; Arch. Ital. de Biologie, 1895, p. 177.

Mosso.—Die Diagnostik des Pulses, 1879.

Marey.—La Circulation du Sang, 1881.

Marey—Gazette médicale de Paris, 1878, No. 48.

Maximowitsch and Rieder.—Einfluss der Muskelarbeit auf den Blutdruck; Deutsch. Arch. f. klin. Med., 1890, p. 329.

Oliver.—Clinical Aspects of Arterial Pressure; Edinburgh Medical Journal, Nov. 1898.

Oliver.—A mode of determining venous blood pressure in man; Journal of Physiology, XXIII, 1898-'99.

Oliver.—Pulse Ganging, 1895.

Potain.—Du Sphygmomanomètre; V, July, 1899, Arch. de Physiologie.

Potain.—Faits nouveaux relatifs à la détermination de la valeur du Sphygmomanomètre; Arch. de Physiologie, Oct., 1890.

Potain.—Détermination expérimentale de la valeur du Sphygmomanomètre; Arch. de phys. norm. et pathol., XXII, 1890.

Tangl and Zuntz.—Ueber die Einwirkung der Muskelarbeit auf den Blutdruck; Pflüger's Archiv, LXX, 1899, p. 544.

Schweinburg.—Zur Wirkungsweise des Amylnitrats; Wiener med. Presse, 1884.

Tigerstedt.—Lehrbuch der Physiologie des Kreislaufes, 1893.

Waldenburg.—Die Messungen des Pulses und Blutdruckes am Menschen; Berlin, 1860.

Wetzel.—Blutdruck im Fieber; Zeitschr. f. klin. Med., Bd. V, 1882.

Weiss.—Münchener med. Wochenschr., 1900, No. 4.

Zadek.—Messung des Blutdruckes am Menschen; Zeitschr. f. klin. Med., Bd. II, 1881.

THE CIRCULATION IN PUERPERAL ECLAMPSIA.

BY DOUGLAS H. STEWART, M.D.,
OF NEW YORK

AS THE products of exhaustion retained in a muscle cause exhaustion, so kidney inefficiency will check elimination, by retaining waste. Nay, more, it may bring about reabsorption, of substances already eliminated but not yet expelled, by a sort of endosmosis acting on the bowel contents. For instance, Epsom salts by enema or mouth increase the fluid in the intestines and purge; by venous injection they reverse matters, because being endosmotic they draw toward themselves. In much the same manner some substance in eclamptic blood favors reabsorption to such a degree that Stercoremia Gravidarum appears an exact term to designate a blood poisoned by its own excretions and then flooding the nerve centers until they are goaded into convulsive activity. Before this point is reached the circulation has almost reversed the conditions necessary for the proper tension in the vessels concerned in lung-exchange, sweating and the excretions of the intestinal mucous membranes. The whole arterial system presents a picture of overstimulation and of force and resistance to force. If the blood quantity is increased, quality is lowered and poisons are augmented beyond any protective destruction which the liver affords against the toxic conditions within the portal vein of even the healthiest animal. Plethero-toxemia would about describe the condition.

Heart action is started and maintained by blood in the auricle, ventricle and coronary arteries. Not only are ample stimulating properties furnished for the mechanical portion of the circulation, but the nerve centers, engineer and governor as they are, depend for existence on the contents of the system they control. Every one who has seen the ligation of the coronary arteries will recall the prompt arrest of the beat. Conversely the action of a heart against arterial resistance forces more blood through the coronary arteries and increases heart power. In eclampsia the left ventricle is hypertrophied and the law of rapidity inversely as power is violated. We might have dilatation were it not for the hypertrophica gravidarum which makes the heart wall of the pregnant woman so thick and strong. The pressure on the arterial side is more than ten to one on the venous. The veins are so underfilled that contractions of pulmonary and vena cava aid the blood into the auricle over the area of negative tension, yet we are told to bleed from the vein, knowing of the old experiment, the blood of one thirty-pound dog into the veins of another thirty-pound dog = pressure-rise, 0.

The vasomotor center will restore and maintain the normal despite any local fall of tension and you simply cannot reduce blood pressure short of dangerous hemorrhage and collapse. This pressure falls after venesection because poison is withdrawn and not because blood is drawn. To diminish arterial tension one would bleed from an artery not from a vein.

In studying the actual poison ammonia and alkaloid s make our working basis. Ammonia stimulates the accelerator nerves and ptomaines are near relatives to vegetable alkaloids (Brieger says identical). Strychnine has a first cousin in the eclamptic group and eclampsia has a strong clinical resemblance to an overdose of nux vomica. Even from this standpoint removal is better than antagonism, and, theoretically, a daily loss of four ounces of blood is worth the whole list of cardiac depressants from aconite, bromide and chloral down to V, which stands for veratrum. In venesection consider the age of the patient. The pulse will soften as you diminish heart irritation and heart-effort will be relieved as you extract poison. Less blood in the coronary arteries will weaken heart stimulus, arterial resistance will fall with decreasing dilatation and tension and friction in the arterioles, will abate as expansion lessens.

Nicholson seems to find a digitalis-like substance in the blood; and recommends thyroid extract as an antidote. As to the question of digitaline or strychnine, both substances agree in certain symptoms of their poisoning. But, it seems to me, that the great heart-stimulant is venous blood. The normal renal vein contains scarlet blood which was dirty in the artery, has been cleansed in the kidney and is now the purest in the body. Tracing this into the vena cava we find venous blood being diluted by arterial and thus, when this mixed stream reaches the heart, its stimulating power is mitigated.

If the kidney is not excreting properly the waste products already in the vena cava are fortified by those in the renal stream, broadly speaking the caval blood is made thoroughly venous and consequently the heart is overimpelled.

Plants may retain and store up their excretions in a harmless or even useful manner, but the animal that ceases to excrete is apt to feed plants. The plant circulation may throw waste to one side and incorporate it in its body, but the animal circulation must cleanse itself by expulsion of waste through eliminating organs.

Finally, as the thorax aspirates the venous so it drives the arterial flow and as the arterial circulation is already overfilled, in puerperal eclampsia, calm respiration is decidedly desirable.

SOME INTERESTING PHENOMENA OF SPECIFIC IMMUNE SERA.*

BY ARTHUR P. HITCHENS, M.D.,
OF GLENOLDEN, PA.

THE difficulty which has always been experienced in finding an efficient vaccine and a curative serum for such diseases as typhoid fever, dysentery, bubonic plague and cholera has stimulated work along the line of immune sera; work which has brought to light many interesting and valuable facts. Vaccines have been made for these diseases by the employment of killed cultures of

* Read at a meeting of the Northwestern Medical Society, Philadelphia, Pa. November 4, 1902.

the causative bacteria. The results of such treatment, so far as prevention is concerned, have been encouraging, but the reaction following injection is often rather severe. For this reason vaccination will be used only during epidemics unless a body is produced which, while lessening the severity of the reaction, does not impair the value of the treatment.

Since this class of bacteria produces in culture media no considerable amount of soluble toxin, the actual bodily presence of the bacterium is necessary for the production of its characteristic pathologic effects. In diphtheria, tetanus and botulismus, which are toxic diseases, the organisms grow locally and produce soluble poisons, and immunity to these diseases results from the presence within the body of a substance which will neutralize these poisons—antitoxins. In such diseases as typhoid fever, pneumonia and conditions caused by the pyogenic cocci, we are dealing with the living organisms, therefore, the establishment of immunity against such a disease involves the destruction of the bacteria.

The two most prominent theories which have been put forward to explain this form of immunity are: the phagocytic theory of Metschnikoff and the alexin theory of Buchner. According to the theory of Metschnikoff, when bacteria gain entrance to the body, they are attracted by chemiotaxis to the phagocytes englobed and digested. It has been shown by this school that in a disease to which the animal possesses no immunity there is a negative chemiotaxis between leucocyte and bacterium; a repulsion which lessens as susceptibility decreases and is finally replaced by positive chemiotaxis. The higher the grade of immunity obtained, the greater the degree of attraction and the more marked and active the phagocytic process. Under such a conception the development of sera capable of transferring immunity to other animals has always been a source of great controversy. According to the theory of Buchner, in the production of immunity there are elaborated by the cells of the body substances known as alexins; these are held in solution by the body fluids and have the power of dissolving the bacteria. Both these theories leave much to be explained.

Pfeiffer's reaction[1] may be considered the starting point of those interesting discoveries in the recent work on immunity from infection. This reaction is as follows: a guinea pig is rendered immune to cholera by the intraperitoneal injection of gradually increasing doses of the attenuated spirillum; after a few days of this treatment the live germ may be tolerated and is administered in the same manner. If an animal thus immunized is given living cholera spirilla intraperitoneally it will be found by a microscopic examination of the peritoneal fluid within a few minutes that a degeneration is commencing among the spirilla. A drop or two withdrawn at intervals of every few minutes shows a progressive bacteriolysis; the highly motile bacteria cease movement, lose shape, swell, become granular and finally disintegrate. All this occurs within 20 minutes. Pfeiffer's reaction is specific, the body fluids of an animal immunized to cholera have no effect on other spirilla. The reaction may be also observed outside the body by using some of the fresh serum of an immunized animal. Only fresh serum must be used, since serum kept, no matter under what conditions, rapidly loses its bacteriolytic effect, and the power is entirely destroyed in serum heated to about 60° C. Pfeiffer noticed that if the heated immune serum along with cholera vibrios was introduced into a fresh, untreated guinea pig's peritoneum the usual reaction took place, and from this deduced that the immunizing material was not altogether destroyed by heat but that in some way it affected the animal's organization and helped it to dissolve the bacteria. Bordet[2] went farther and found that the heated immune serum could be reactivated by the addition of a little fresh blood serum from an immunized guinea pig.

The researches of Bordet have been of the greatest value in throwing light on some of the intricate problems of immunity against infection. These consisted in the study of the phenomenon which occurs when the blood corpuscles of an animal of a certain species (the rabbit, for instance), are injected into an animal of another species (guinea pig), after the manner of an immunizing experiment. The serum of the guinea pig will then be found to possess the power of dissolving the corpuscles of the rabbit—either when injected into the latter or *in vitro*. It was found, as in Pfeiffer's reaction, that this hemolytic serum lost its power of dissolving the corpuscles if heated for one hour to 55° C., this power returned on the addition to the inactive heated serum, of serum from a guinea pig which was fresh and untreated.

These results with some work done by himself and Morgenroth, led Ehrlich to conclude that two substances distinct in character are concerned in this form of immunity; one contained in fresh normal serum and destroyed by heat (thermolabile)—the complement; the other depending on immunization of the animal and more resistant (thermostable)—the immune body. Ehrlich[3] has explained the dissolution of the corpuscles by these two substances, by extending somewhat his lateral chain theory. According to this each of the substances possesses bonds of union or affinity which are called haptophore (ἅπτω, touch; φέρω, carry) groups, the immune body having two groups, one linking itself to a receptor or bond of union in the body which is being acted upon, in this case the red blood corpuscle; the other joined to the corresponding in the complement.

The names which these two substances have received from different sources are many and various. The immune body is also called the amboceptor, philocytase, sensitizer, preparative, fixative, copula, intermediary body, desmon and *"la substance sensibilisatrice."* To the analogous substances sometimes occurring in normal sera, Ehrlich has given the name *"Zwischenkörper"*—

generally translated "go-between." The complement is also known as the alexin or cytase.

In an article by Richardson[4] the union and relations between complement, immune body and corpuscle or bacillus as the case may be, is represented in a very diagrammatic manner, as pictured by Ehrlich, to aid in a comprehension of this difficult subject.

Richardson's work seems to denote that the mixture must be made in a certain way; using the serum from patients suffering with typhoid fever he found the ordinary Widal reaction to be present, but there was little or no tendency to destruction of the organisms. When, however, some normal serum was added to the mixture, the clumps of bacilli were found to be transformed within an hour or two into finely granular masses. If the order of mixing was bacillus + typhoid patient's serum + normal serum, bacteriolysis took place rapidly, but if the two sera were mixed previous to adding the organisms, not only did no digestion take place, but the bacilli grew luxuriantly in the mixture. In other words, at the height of the disease, in the few cases investigated, there was not only no active complement in the blood of the patient, but the serum contained something which united with complement from without—probably a neutralization by or union with the immune body. Added, however, in the bacillus + typhoid + normal order, the bacillus was united by its receptor to the immune body in the typhoid serum, allowing the complement to act as the alexin. The small number of cases reported make this observation only suggestive. Longcope[5] found, however, that the blood of some typhoid fever patients showed a dimunition in the specific complements for the typhoid bacillus. Normal individuals show considerable variation in the power of their bacteriolytic complements, and it appears that the specific complement content has much to do with the individual's resistance to a disease.

Researches on the subject of cytolysins justify the deduction that the bodily capacities at work in hemolysis are identical with those concerned in bacteriolysis and bactericidal action, but while the processes are the same, it does not follow that the substances which cause hemolysis are identical with those which give rise to bacteriolysis.

In their work on the cytolysins Metchnikoff[6] and others have obtained bodies capable of dissolving the variety of cell injected and specific for that cell. If emulsions of the testicle or the spermatic fluid be injected into the peritoneal cavity of an animal such as the guinea pig, after the method of immunization, the serum of the animal develops the capacity of immobilizing fresh spermatozoa. Similar experiments have been conducted with leucocytes. The "spermotoxin" injected into a female of the species from which the spermatic fluid was obtained will render her sterile. Emulsions of bone marrow, and mesenteric glands have been injected into animals and sera have been obtained which possessed the power of dissolving white blood corpuscles, both *in vivo* and *in vitro*. A serum produced by the injection of spleen emulsion has a solvent action on the mononuclear and also on the polymorphonuclear leucocytes, while a serum produced by the injection of bone marrow has a special action on the latter only. Von Dungern[7] has been able to produce a serum which will immobilize the cilia of the tracheal columnar epithelium. Sera produced by the injection of liver tissue produce conditions allied to what occurs in phosphorus poisoning. Similar poisonous sera have been obtained by the injection of kidney cells and cells from the central nervous system. The nephrotoxic serum has also been made by ligating one of the ureters, the consequent atrophy and absorption of renal tissue acting as though received from another animal. All these sera are rendered inactive by heating them and may be reactivated by the addition of some fresh normal serum.

Besides the bacteriolytic and cytolytic action of immune sera, there are other effects produced which are none the less interesting, and one of the most useful in practical medicine is the agglutination or clumping reaction. This phenomenon has been so widely used and has been of such great value in the early diagnosis of typhoid fever that anything said concerning its technique would be waste of time. The Gruber-Durham, or so-called Widal reaction, however, is not limited in usefulness to typhoid fever, it is of positive value in many other infectious diseases. It is an invaluable aid in the determination of certain bacterial species, and especially is this the case in the recognition of the closely allied para-typhoid and paracolon groups. Recently much interest has been centered on the para-typhoid infections and the only way of positively diagnosing them is by the agglutinin reaction. In medical jurisprudence the specific serum reaction is destined to be of great value in cases where there is a question as to the cause of death. The agglutinins will show whether or not an infectious disease was the cause.

The precipitins may be of still more value in forensic medicine. An animal (*e.g.*, the rabbit), treated with the defibrinated blood of the guinea pig after the manner of an immunization will have developed in its serum the power of clouding and precipitating guinea pig blood from its solutions or suspensions. Human blood injected into an animal will cause the development within that animal of a "human" precipitin, and with the exception of the anthropoid apes, the gorilla, chimpanzee and orang-outang, the reaction is specific for the blood of man. In few cases, in this country, will there be any trouble in excluding the blood of these animals on other grounds. Positive results have been obtained with blood which had been dried for a long time on such things as plaster, pieces of wood, muslin, hair, earth, glass, etc. When a diagnosis is to be made the spot of blood is soaked out in water; a positive reaction is obtained in very high dilutions. Serous effusons and albuminous urine will produce specific

anti-sera like the blood. All albuminous fluids which have been tried thus far have yielded positive and very gratifying results, the reaction for albumin is the most delicate known. Uhlenhuth[8] obtained an albumin reaction with egg white in dilutions of 1-100,000, while the highest dilution with which he could get a positive test with the ordinary chemical reagents was 1-1,000. This will be specially interesting to those interested in clinical medicine, not only because it will detect very minute quantities of albumin in the urine but it will show the kind of albumin present. A serum containing "human" precipitin will react only with human serum, albumin added from other sources either by insane patients or by others with the idea of deceiving the physician, will cause absolutely no reaction. Human milk injected into a rabbit will produce a precepitin which will coagulate human milk but will have no effect on either goat's or cow's milk. It is almost an axiom that the babes of a certain animal species thrive best on milk from a mother of the same species. A series of experiments performed by Pope and Sollman[9] to determine whether specificity of serum reaction had any bearing on this resulted negatively. Milk fed to the animal *per oram* had no effect in producing precipitins.

Ainsley Walker in "Immunization Against Immune Serum" brings out a point which has a most important bearing on certain uses which might be made of the immune sera. There were two series of experiments made, the first concerning the bacillus itself. He succeeded in making the bacillus of typhoid fever grow in its own immune serum and found that the organism thus immunized to its immune serum was increased in virulence. In the other series animals were given increasing doses of typhoid serum. Each animal received five injections. About two weeks after the last injection of serum they were given measured doses of the live typhoid germ. Compared with untreated animals it was found that although susceptibility to the organism was not increased, the serum in ordinary doses had lost its protective power. Applying this fact to human treatment we will suppose a case, a man living in a plague infected district wishes to keep himself immune to the disease and seeks to do this by taking at intervals prophylactic doses of the Yersin serum. After a time on account of the *anti*-immune body he has stored up, each injection will become immediately neutralized and consequently valueless. The fear, entertained by some, that repeated injections would also destroy the natural immunity of the subject was proved to be unfounded. For although anti-immune body is stored up it is *singular* in its neutralizing power and not *reciprocal*. Welch[11] states that this reaction does not occur with antitoxins—no "anti-antitoxin" is formed. This latter fact is borne out by ample clinical evidence. Prophylactic doses of tetanus antitoxin are administered regularly to horses under treatment for the production of various serum preparations with the result that tetanus is never seen in horses thus treated.

Since the promulgation of Buchner's alexin theory and Metschnikoff's phagocytic theory, a continual controversy has waged between the German and French schools, each school claiming greater accuracy for the theory of its respective master. Metschnikoff, at present, though still holding that the leucocytes are the active agents in producing the immune body and complement, allows that these bodies are contained in the body fluids. The advocates of the theory of Buchner as modified by Ehrlich and his associates, while contending that other body cells are concerned in the elaboration of alexins, admits that the leucocytes play a prominent part in this work. Whatever may be the outcome of all this intricate and involved theorizing, from the fact that these concessions have been made, it would appear that we are approaching an accurate knowledge of the phenomena concerned in immunity. And the hope may be entertained without fear of being thought too sanguine that before long we shall have curative sera for typhoid fever and its congeners, of as much value as is antitoxin in the prevention and treatment of diphtheria.

REFERENCES.

1. Pfeiffer and Issaeff; Zeitschr. f. Hyg., 1894, Vol. XVIII, p. 355.
2. Bordet: Ann. de l'Inst. Past., 1895, Vol. IX, p. 462.
3. Ehrlich and Morgenroth: Berlin klin. Wochenschr., 1899, pp. 6, 481; 1900, pp. 451, 781; 1901, pp. 251, 569, 598.
4. Richardson: Journal of Medical Research, Vol. I, p. 189.
5. Longcope: Univ. Pa. Med. Bull., Vol. XV, No. 9, Nov., 1902.
6. Ritchie: "Current Theories on Immunity," Jour. Hyg., Vol. II, p. 247.
7. Von Dungern: Münchener med. Wochenschr., 1900, p. 677.
8. Uhlenhuth: Deut. med. Wochenschrift, No. 6, 1901.
9. Pope and Sollman: American Medicine, Vol. IV, No. 11.
10. Walker: Journal Pathology and Bacteriology, March, 1902.
11. Welch: Huxley Lecture, MEDICAL NEWS, Oct. 18, 1902.

MEDICAL PROGRESS.

SURGERY.

Esophagotome.—An instrument for cutting strictures of the esophagus, founded upon the Abbe principle of chafing through the distended stricture with a string which is pulled back and forth, is described by T. DUNHAM (Ann. of Surg., March, 1903). It is constructed so that the operation is performed entirely through the mouth, without opening the stomach, as is the case with the Abbe method. The instrument consists of a whalebone staff with an olive metal tip secured fast to one end, and pierced by two tunnels. One is a curved tunnel convex toward the end of the instrument, with its two ends opening opposite each other, well forward of the greatest diameter of the olive. This curved tunnel is made by two tunnels which meet at an angle. The crest between them is smoothed down by pulling a string covered with wet emery powder. Unless this angle is thus smoothed, the string of the operation is quickly chafed through itself. The second tunnel begins at the base of the olive, and is a guide tunnel for accommodating a guide previously passed through the stricture. To shield the soft parts of the pharynx from scraping by the string while cutting, a guard is made to hold the string close to the whalebone, consisting, briefly, of a handle, to which are soldered two wires, which are run along the whalebone by means of which the guard may slide along the staff. The wires also have two sets of lateral eyes in which the cutting strings may play to and fro. These strings are thus held away from the soft parts. The method of using this instrument is as follows:

An olive a little larger than the stricture is secured to the whalebone. The two ends of the string which pass through its tunnel are threaded through the eyes of the guard. As a preliminary, the string must be well soaked and free of kinks. The patient's head is hyperextended, so that the esophagus and pharynx are as nearly as possible in a straight line. The guide is then passed through the stricture, without using any force. Then the wire of the guide bougie is passed through the guide tunnel of the olive, which itself is slipped along until its tip comes into contact with the bougie portion of the guide bougie. The two are then passed down to the stricture and the guard arranged to protect the epiglottis. Moderate pressure is now put upon the staff and the string is worked until the stricture is cut through.

The Taste Fibers.—In order to determine the relation of the taste fibers to the trigeminal nerve, a series of practical experiments were made on cases in which the Gasserian ganglion had been extirpated, by H. CUSHING (Johns Hop. Hosp. Bull., April, 1903). The uniform results in thirteen cases led the author to the following conclusions: That the perception of taste is unaffected on the posterior portion of the tongue and never permanently or completely lost on the anterior two-thirds after removal of the Gasserian ganglion. A temporary abolition or lessening of the acuity of taste may be found to exist over the anterior and an esthetic portion of the tongue for some days after the operation. This temporary loss of function may possibly be occasioned by some interference with chorda transmission brought about by a mechanical or toxic disturbance due to degeneration of the lingual nerve. A lesion of the trigeminal nerve may be associated with disturbance of taste over the chorda territory without the necessary inference that the nerve is a path for gustatory impulses. The trigeminal nerve in all probability does not convey taste fibers to the brain either from the anterior or the posterior portion of the tongue.

Treatment of Traumatic Gangrene of the Extremities.—The many unsuccessful results following amputation for spreading gangrene of the extremities has led VAN BUREN KNOTT (Jour. Am. Med. Ass'n, April 11, 1903) to propose a new method of treatment for this condition. He believes that the unsatisfactory outcome in many cases is due to two factors, the dissection of the flaps and the introduction of sutures. The dissection of the soft parts into suitable flaps necessarily interferes with the blood supply of tissues, the vitality of which is already seriously in question. The introduction of sutures also causes retention within the wound of infectious elements which may have ascended to a higher level than was believed probable, and further interferes with the flap nutrition by the tension which, no matter how carefully the sutures may be placed, cannot be avoided. The author's method is as follows: First estimate as carefully as possible the line between the diseased and healthy soft parts. Then having thoroughly cleaned the entire area, wrap the gangrenous part in a sterile towel up to the line selected, and at this point make a circular amputation, cutting through the soft parts and bone at the same level. Ligation must be carefully done without including any of the perivascular tissue in the bite of either forceps or ligature. The wound is left open and a moist dressing of gauze saturated in salt solution applied which is changed several times daily. After seven to ten days, if the wound is perfectly clean and the condition of the patient favorable, the classical circular amputation may be made by dissecting up the flap already outlined and sawing the bone at the proper level. The advantages of the method are, a minimum of shock while removing the gangrenous tissues, the possibility of making the amputation higher up than by the old method, because soft tissues whose vascular connections are undisturbed are less apt to slough, the freest possible drainage is provided for a sufficiently long time, if the disease stops at the line first chosen no unnecessary sacrifice of tissue has been made, as the flaps have been defined at the lowest limit of safety, and finally patients too weak and prostrated by sepsis to withstand a typical amputation may endure this much shorter procedure and be built up in the interval before the second operation is necessary.

Detection of Renal Calculi by X-rays.—So great are the difficulties in locating renal calculi by the X-rays that the greatest care and accuracy must be observed in order that the results may be trustworthy. H. P. MOSELEY (N. Y. Med. Jour., March 7, 1903) says that fluoroscopic examination is absolutely unsatisfactory for both renal and vesical calculi because the portion of the body under consideration is the most difficult we have to examine. It does not allow sufficient rays to pass through it to enable differentiation by one retina. The object is also so small frequently that it cannot be brought near enough to the screen to cast a distinct shadow. Furthermore, the necessity of remaining at least ten minutes in an absolutely dark room before making any satisfactory fluoroscopic examination is mentioned to show what careful preparation of the observer's eye is necessary. The only positive means of detecting the presence of renal or vesical calculi is by radiographic examination and even here negatives are satisfactory only when they show good differentiation between the various tissues, the outlines of the vertebræ, the transverse and spinous processes, the last ribs and the psoas, iliacus and quadratus lumborum muscles. The plate should include the lower ribs, both kidneys and the length of the ureters. An 11x24 plate is usually sufficiently large. The target of the tube is placed over the umbilicus from 18 to 24 inches from the plate on which the patient lies flat on his back. Two radiographs should be made and compared before any opinion is given. The patient should have the gastro-intestinal tract prepared almost as carefully as for a celiotomy for various substances in the intestines may give rise to the difficulties in the interpretation. Other sources of error may be mentioned as defects in the plates, air bubbles on the plates and especially air in the gut may cause shadows which may be mistaken for calculi. Pure uric acid calculi give very poor shadows and can seldom be recognized. Calculi of oxalatis phosphates and mixed urinary salts usually give good shadows. The present status of the value of this mode of examination for renal calculi can perhaps be best given in the words of Dr. Andrew J. McCosh who says "as corroborative evidence a radiograph showing a renal calculus is perhaps of more importance than any one symptom. If an expert observer sees in these different plates a kidney stone I should regard the evidence as conclusive, provided other symptoms are present." Dr. F. H. Williams writes: "The absence of indications of a calculus in the negative does not exclude the presence of a renal calculus. On the other hand, when all suitable precautions have been taken indications of calculi on satisfactory negatives afford good evidence of their presence when taken in connection with the clinical history."

Transplantation of Omentum.—Omental transplantation as a reinforcement to intestinal suture is a recognized operation. E. J. SENN (Jour. Am. Med. Ass'n, April 18, 1903) suggests the possibility of using it in covering intestinal defects. This would include duodenal ulcer, intestinal tuberculosis, gangrenous cecum, also where suturing would cause too great a narrowing of the intestinal lumen, or where the condition of the patient or extensive adhesions would not permit

an enterectomy. The author reports one case in which the procedure was successfully resorted to, a patient with a gangrenous appendix, which was inadvertently torn away from its cecal attachment during the act of ligation. A portion of the omentum was stitched over the opening with interrupted catgut sutures. No fistula resulted and the patient made a perfect recovery. A series of experiments were also made on dogs, but in all cases death resulted from perforative peritonitis, probably because the omentum of the dog, being thinner than that of man, nor as vascular, is not adapted for plastic work. The value of transplantation over defects in the stomach has been established by other observers, but with reference to intestine, the procedure is still in the experimental stage. The author thinks the cecum is the most favorable part of the intestinal tract for the operation on account of its slight mobility. The peristaltic movements in the intestines place considerable tension on the transplanted omentum and a preliminary fixation should be done of the intestinal segment to the abdominal wall. Abundant drainage should be provided far down to the seat of suture, and the general peritoneal cavity thoroughly walled off.

Renal Decapsulation for Chronic Bright's Disease.—The possible improvement of symptoms in this disease by decapsulation of the kidney was not thought of till such results were found to follow in simple cases of nephrorraphy upon kidneys which presented mild cases of nephritis. The rationale of the operation seems to depend upon the formation of new blood vessels in the new connective tissue capsule which forms to hold the kidney in place. Adhesions rapidly follow the decapsulation of the organ and new blood channels are formed which compensate for the diminished blood supply through the normal channels. G. M. EDEBOHLS (Med. Rev., March 28, 1903) was the first to undertake the operation with the deliberate purpose of curing chronic Bright's disease. His total experience in such operations up to the end of 1902 embraces 51 cases, the first one having been operated upon in 1898. With one exception they were all adults. The diagnoses were made upon the symptoms, signs and urinary examinations and in nearly every case were confirmed by several examinations. In 47 cases operations were performed upon both kidneys, in four it was performed upon one only. Seven patients died within seventeen days after the operation. Seven patients died at periods after the operation varying from two months to eight years. Two patients do not show satisfactory improvement, twenty-two patients are in various stages of satisfactory improvement and progress toward health at periods varying between two months and fifteen months after operation. The urine of several of these is at present free from albumin and casts. One patient, after a cure of four years, again has chronic Bright's disease. Nine patients were cured and remain cured at periods varying from one year and nine months to ten years, the average duration of cure being four years.

EYE, EAR, NOSE, AND THROAT.

Retinal Hemorrhages in Fracture of the Skull.—The diagnostic value of this symptom in the fractures of the base of the skull, is commented on by R. A. FLEMING (Edinb. Med. Jour., April, 1903). He has made numerous post-mortem examinations and divides his cases into three groups, the first including cases in which the subarachnoid hemorrhage was mostly unilateral, and retinal hemorrhage was present but confined to the eye on the same side. In the second the hemorrhage was marked on both sides and the retinal hemorrhage likewise. The third includes cases in which there was no retinal hemorrhage visible after death, and where there was little subarachnoid effusion, or an effusion of slow onset. The conclusions suggested by these cases is that a subarachnoid hemorrhage, if sufficiently rapid in its development, will cause retinal hemorrhage, and that if the effusion is unilateral, the hemorrhage will be confined mostly to the affected side. Although it is difficult to affirm that in most cases such recognition will afford an indication for treatment, it does determine the side of the subarachnoid effusion, and where the question of operative intereference is under consideration, this information may be helpful in choosing the best site for trephining.

The Bandage in Ophthalmology.—The indications for the application of bandages to the eyes are taken up by DE RIDDER (Jour. Méd. de Bruxelles, March 26, 1903) who classifies such bandages as protective and compressive. Indications for the former are given as follows: (1) In recent ulcers of the cornea, to gently close the eyelids, thus preventing friction from winking, and protecting the eye from dust, which, in the normal condition is washed from the smooth corneal surface by the tears, but in the presence of corneal ulcer is prone to settle in its base; (2) in superficial wounds of the cornea from foreign bodies, as a protection against infection; (3) in deep corneal wounds; (4) in grave forms of conjunctivitis, when one eye is affected, to prevent infection of the healthy eye; (5) after operations for cataract, iridectomy, etc. The compressive bandage is indicated: (*a*) In corneal ulcers in which the superficial layers have been destroyed, in order to aid the posterior layers in resisting intra-ocular pressure; (*b*) in mild forms of lagophthalmos a compressive bandage applied at night suffices to protect the eyeball from exposure during sleep. During the day, the sensation of dryness in the cornea will of itself provoke more frequent closure of the eyelids; (*c*) in neuroparalytic keratitis, in which condition, through paralysis of the trigeminal nerve the cornea partially loses its sensibility, and consequently the reflex closure of the eyelids to protect the cornea against external irritation, does not occur; (*d*) in hernia of the iris; (*e*) in corneal staphyloma, to obtain a flat, resistant cicatrix, the bandage should be worn a prolonged time; (*f*) in keratectasia; (*g*) in edema of the conjunctiva and eyelids; (*h*) in subconjunctival palpebral emphysema.

THERAPEUTICS.

Massage of the Prostate in Gonorrhea.—A method of treatment which effected a clinical cure in a number of chronic gonorrheal cases is described by P. ADOLPHO (Gazz. Osped., March 22, 1903), though bacteriological confirmation of the cure is lacking. He proceeds as follows: The patient is placed in a supine position and 10 c.c. of an antiseptic, astringent fluid is injected into the urethra by means of an ordinary glass syringe. A solution of resorcin or zinc sulphate is generally used, and to this is added a small quantity of laudanum to lessen the discomfort of the application. The patient is then directed to retain the solution by closing the external meatus between the index finger and thumb. The physician next introduces his right index finger into the rectum as far as the prostate and gently massages first the lateral lobes of the gland and then the middle, always stroking downward toward the rectum. Massage is continued for five minutes; at the end of which time the fluid is allowed to flow slowly from the urethra. Treatment is repeated daily for from twelve to twenty-five days, according to the duration of the disease. By this method the nutrition of the parts is improved, the atonic condition of the tissue is overcome and through the massage, the fluid thor-

oughly bathes all parts of the urethra. The injected liquid is said to return clear after the first treatment, but in subsequent treatments it is turbid and brings away with it fragments of desquamated epithelium; but as the cure progresses, it again returns clear. No ill-effects have been seen in any of the cases so treated and an apparent cure has been effected in all.

Glycerol of Iodine.—Attention is called to the value of this remedy in various diseases and to its superiority when compared with the ordinary tincture of iodine, by T. W. WILLIAMS (Am. Med., April 11, 1903). Glycerin is a perfect solvent of iodine and less volatile, and the preparation can therefore not be used ad libitum as we would the tincture. It leaves no stain on the skin and produces only a slight local irritation. The preparation can be easily made as follows: A pint flask such as is used for making chlorine gas, is connected by means of a glass tube with a wide-mouthed bottle. An ounce of iodine is placed in the flask, together with twelve ounces of alcohol. The flask is set in a sand bath over some form of heater and the wide-mouthed bottle placed in ice or very cold water. A gentle heat is used until the alcohol and as much of the iodine as it will carry over with it, has been distilled in the wide-mouthed bottle. All impurities in the iodine will thus be left in the flask and to this distillate should be added four ounces of glycerin, commercially pure. The author has used the preparation with good results in chronic pleurisy, adenitis, chronic bronchitis, and goiter.

The Scopolamin-Morphine Narcosis.—This method, since its introduction in 1900, has called for a number of varying opinions. Further observations on its use have lately been published by its author, SCHEIDERLEIN (Münch. med. Woch., March 3, 1903). He has found that anesthesia did not come on with either one of the ingredients, but could be readily induced when the two were used in combination, even if only one-half of the former dose was employed.

As with all anesthetics, certain precautions must be observed during recovery. The disadvantages are (1) the time which is lost in determining the proper dose for each individual, and (2) the respiration must be carefully watched. The advantages are, safety after careful preliminary trial, no special anesthetist is needed, the psychical shock may with care be entirely eliminated. The author thinks that the failures of others have been due to incomplete preliminary trials, to the use of too large doses, and to not allowing sufficient time for the narcosis to develop. An hour and a quarter to an hour and a half should be permitted to elapse between the first injection and the incision. He has also made experiments with very dilute solutions given as a transfusion, and has administered the drugs by mouth, but is not prepared to publish his conclusions.

Silver Sulpho-ichthyolate.—Only a few scientific studies have been made upon the action of this drug commonly known as ichthargan. H. C. WOOD, JR. (N. Y. Med. Jour., April 11, 1903) has made various experiments with the drug and says that it is an astringent but much less irritant than the nitrate. When applied to the mucous membrane of the mouth it produces a styptic, metallic and slightly bitter taste but no pain and no visible sign of inflammation. It is precipitated by the ordinary reagents for silver and, what is of particular importance, by the salts of hydrochloric acid. It is impossible for it to preserve its integrity in the stomach and undoubtedly is broken up into silver chloride and ichthyol. When injected into veins it is impossible to say just what its action is, but it is highly improbable that it can maintain its integrity, for it is so rapidly precipitated by the alkalies, the chlorides and the albumins of the body. When injected hypodermically it is absorbed with the greatest slowness and it is therefore unlikely to exercise any poisonous effect. So far as its physiological action is concerned it has been found by experiment upon the frog that it causes motor weakness and finally complete paralysis which is chiefly central in origin but the spinal centers are also somewhat depressed. Its action seems to be precisely similar qualitatively to that of the other silver salts, but it has the advantage over the nitrate in that it is locally less irritant and is decidely less poisonous.

Treatment of Migrane.—Migraine is probably the most difficult malady which the practitioner has to treat. It often causes profound remote effects upon the sufferer and inasmuch as its pathology is so little known, we often find ourselves helpless in its presence. It is popularly known as "sick headache" or "bilious attack." Before the age of ten it is rarely observed, and after thirty-five it is equally infrequent. Climate has a marked influence—the colder latitudes with damp east winds being potent causative factors. The heritage from gouty and rheumatic families as well as true epilepsy are also of etiological importance. Indeed it is highly probable that some cases of pronounced and obstinate migraine are but masked evidences of true epilepsy. In order to attack the migraine satisfactorily, every effort must be made to find out its etiology. Knowing its etiology and knowing its pathology are two separate and distinct things. It may be an east wind; it may be diathesis; it may be constipation; it may be mental worry. General treatment therefore is of paramount importance. For the mitigation of the acute attack, the first essential is absolute rest in a darkened room. Many patients do better in an armchair than upon a couch. Heat should be applied to the feet, mustard to the back of the neck and the head should be wrapped in a warm shawl. Tea or coffee usually aggravate the condition. This is practically all that can be done in a general way. If the patient is gouty, colchicum should be given, if rheumatic, the salicylates or asperin, where overworked, sodium bromide, grains 15 every three hours often helps. When produced by eye-strain tincture of hyoscyamus and belladonna in conjunction with bromide often help. If the patient has a specially tender tooth, it should either be extracted or the part actively carbolized. The urine should invariably be examined. If the attack comes on during the menstrual period, a sitzbath combined with the following is desirable:

℞ Spt. chloroformi..... 3ij
Spt. ammon. aromat..... 3ij
Tr. card. co..... 3ij
Liq. ammon. acet. ad..... 3iij
Sig. 3ij secunda hora ex. aq.

Sometimes it is impossible, however, to treat the attack on etiological grounds, and one is obliged to use symptomatic treatment. This introduces the vast and ever-growing group of analgesics of which phenacetine is by far the most popular. In the opinion of the author, JAMES BURNETT (Med. Press and Circ., April 8, 1903), citrophen is the most reliable analgesic for migraine. In the presence of nausea and vomiting before more complicated prescriptions are used, it is often surprising how much relief can be had from the following simple mixture:

℞ Tr. zingiberis..... 3j
Tr. capsici..... ♏36
Syr. zingiberis..... 3iv
Aq. menth. pip. ad..... 3iij
Sig. 3ij omni hora ex. aq.

Under no conditions, however, should citrophen be used before every possible etiological factor has been tried and its remedy found wanting.

THE MEDICAL NEWS.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

COMMUNICATIONS in the form of Scientific Articles, Clinical Memoranda, Correspondence or News Items of interest to the profession are invited from all parts of the world. Reprints to the number of 250 of original articles contributed exclusively to the MEDICAL NEWS will be furnished without charge if the request therefor accompanies the manuscript. When necessary to elucidate the text illustrations will be engraved from drawings or photographs furnished by the author. Manuscript should be typewritten.

SMITH ELY JELLIFFE, A.M., M.D., Ph.D., Editor,
No. 111 FIFTH AVENUE, NEW YORK.

Subscription Price, including postage in U. S. and Canada.

PER ANNUM IN ADVANCE	$4.00
SINGLE COPIES	.10
WITH THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, PER ANNUM . .	8.00

Subscriptions may begin at any date. The safest mode of remittance is by bank check or postal money order, drawn to the order of the undersigned. When neither is accessible, remittances may be made, at the risk of the publishers, by forwarding in *registered* letters.

LEA BROTHERS & CO.,
No. 111 FIFTH AVENUE (corner of 18th St.), NEW YORK.

SATURDAY, MAY 23, 1903.

A NEW DISEASE.

WHEN Graves first described in England the symptom complex that by the irony of fate and Chauvinism does not bear his name as universally as it should, or when Addison selected out of a series of anemia patients the original group of cases which we now know as pernicious anemia, or first described that other symptom complex with its definite pathological basis that we know as Addison's disease, their discoveries attracted little attention from the practitioners of England generally because the diseases described were thought to be very rare and therefore unimportant. Now every practitioner knows them well and would deem it almost a disgrace to miss their diagnosis in typically developed cases.

At the present time the same feeling may be the first impression with regard to the new clinical entity described at the Sixth Triennial Session of the Congress of American Physicians and Surgeons last week in Washington by Professor Osler (see MEDICAL NEWS, page 952), and for which we feel it proper to suggest, much as we deprecate in general the naming of diseases by discoverers' names, the designation Osler's disease.

There is no doubt that this new affection will prove to be much more frequent than may be thought just now. Even at the moment of its first description as a definite independent pathological entity authoritative clinicians from many and distant parts of the country were at once ready to declare that they had seen similar cases although not appreciating the possibility of being in the presence of a hitherto unrecognized symptom complex.

The characteristics of the new affection make it comparatively easy to recognize. Chronic cyanosis is easy to observe and in fact cannot readily escape notice. When the cyanosis is associated with a large increase in the number of red blood cells, that is, with a true polycythemia, then the essential symptoms of Osler's disease are present. The polycythemia must be of a marked degree. As suggested by Dr. Cabot of Boston, 6,000,000 to 6,500,000 of red blood cells to the cubic millimeter may be found not infrequently in the blood of perfectly healthy athletic young men and must not be considered abnormal. The blood count of Osler's disease should show at least 9,000,000 and up to 12,000,000 red cells.

On the other hand the cyanosis must not be due to any of the usual and well-known causes. As Professor Osler remarked, ordinarily when a patient is able to come to a physician's office without assistance, yet is suffering from a marked degree of cyanosis the medical man thinks at once of long standing and advanced emphysema. Other prominent causes for chronic cyanosis are cardiac and renal disease and occasionally advanced tuberculosis of the lungs. None of these causes are present in patients who are the subjects of the new clinical entity. There is no emphysema, no tuberculosis, no cardiac disease and only a slight amount of albuminuria to indicate the existence of any renal disease. The renal disease is evidently not an important factor in the case and is very probably a consequence or a complication rather than a primary etiological factor in the cases. With the increase in the number of red blood cells there is a normally proportionate increase in the hemoglobin value of the blood. This may reach as high as 180 per cent., corresponding to a red blood cell count of from nine to twelve millions. All of the patients so far seen have presented a history of chronic constipation and have had an enlarged spleen.

Dr. Osler, in discussing his own cases and a number of cases which he has found in the literature, for he makes no claim to have been the first to see the disease but only to have been the first to

suggest its independent character, gave prominence to certain features of the possible etiology of the new affection. He called attention particularly to the fact that in cyanosis congenita, that is, the dark blue appearance so commonly seen in children suffering from congenital malformation of the heart, there is often a distinct polycythemia present. This polycythemia corresponds in amount to that seen in the new disease, reaching from 8,000,000 to 10,000,000 of red blood cells to the cubic millimeter. Dr. Osler's patients, however, presented no cardiac symptoms that would point to the existence of congenital malformation of the heart and all of them had reached adult life or even were past middle life. In spite of the cyanosis in the cases dyspnea was not a marked clinical symptom and only existed to a slight degree under circumstances of special exertion or emotion.

While there is no dyspnea, patients do suffer from a distinct feeling of discomfort and in similar cases, reported by others, have also been liable to hemorrhages from the mucous membrane and especially vomiting. The generally uncomfortable feeling that develops in these cases, makes the patients extremely restless and is relieved by venesection. The value of this method of treatment was found by the relief afforded in one case after a very large hematemesis in which several quarts of blood were vomited. From the readiness with which Dr. Osler's ideas were taken up by others it is evident that a number of cases falling under the new clinical entity must exist in this country and practitioners who are on the lookout for this rather easily recognizable group of symptoms will doubtless be rewarded by the discovery of a number of further examples. The study of the pathological basis of the disease and the treatment of its symptoms and complications will doubtless add an interesting and creditable chapter to American Medicine.

THE SURGICAL TREATMENT OF BIRTH PALSY.

IT is a matter still not definitely proven whether electricity, massage and passive movements hasten motor or sensory return in peripheral nerve injury. Certainly the presence of a minimum of voluntary power should be employed in preference to any amount of electrical treatment. The proper province, however, of electricity in these peripheral affections is one of diagnosis and prognosis.

Obstetrical palsy is one of the last of the peripheral nerve injuries to be taken from neurological treatment and placed largely under surgical care for nerve section and suture. As yet but few secondary operations on the brachial plexus have been published.

Three years ago Thorburn reported a plexus operation upon a girl of sixteen years, who recovered in greater part from her brachial paralysis, and Lexer did a similar operation two years ago in which results were not definitely stated. Still more recently, Kennedy (*British Medical Journal*, Feb. 7, 1903) has given a short digest of his four operations upon obstetrical palsy which are highly instructive and must give a decided impetus to the surgical treatment of this affection. This is especially true in cases showing no decided and early sign of improvement by ordinary means of treatment. The rule which Kennedy employs to determine the necessity of operation is as follows: When faradism is not obtained in all the muscles at the end of three months (although galvanism may still be very good) surgical interference is indicated.

The rationale and technic of the operation is placed in the same category as that of surgical treatment of injury in peripheral nerves in general.

The more recent data seems to show that while many obstetrical palsy cases are the result of manipulation in delivery many cases occur in normal presentation as the result of forcible depression of the shoulder while the head is bent to the opposite side and rotated. The first case reported by Kennedy three years ago was a total paralysis of the brachial plexus through cicatricial adhesions; the latter were removed by operation and practically complete recovery obtained fourteen months after operation. The second case operated on was one of cranial presentation. Forceps were used causing considerable compression and typical birth palsy developed in consequence. An operation was advised and performed at the end of three months. Twelve weeks after the operation power began to return and in nine months the child had recovered from the palsy, except a little difficulty in supination of the forearm. The third case was a breech presentation followed by torticollis of the right side and Erb's palsy of the same side. The patient regained partial power by the usual non-operative method of treatment, nevertheless there was considerable wasting of paralyzed muscles. The bones of the right arm were also considerably atrophic. As a forlorn hope an operation was performed. The usual cicatricial mass was found and removed. Excision and suture of the fifth and sixth nerves was performed and the torticollis was also cor-

rected. Five months after the operation improved faradic contraction was noticed in the deltoid and biceps without increased motor power. Kennedy thinks too much muscle and bone destruction had taken place for much regeneration; any marked return of power seemed doubtful. It is interesting, however, to note that there was some regeneration even after an apparently irremedial destruction.

The fourth case was a transverse presentation. Version was performed, the arms slipped above the head and in bringing them down the left arm was fractured. The lesion was finally placed in brachial plexus and an operation was performed at the age of six months. Twelve weeks after voluntary movements were not changed but faradic response returned in the deltoid and biceps.

GROWTH, WEIGHT AND HEALTH.

FOR the last twenty-five years a series of careful records has been kept of the height and weight of schoolboys at two of the large public schools in England, namely Rugby and Marlborough. As a consequence a writer in the *Westminster Review* is able to make a definite comparison of the physique of the public schoolboy of to-day with his predecessor of a quarter of a century ago. It is interesting but not unexpected to find that the advantage in both height and weight is with the modern boy. At Marlborough a boy thirteen years of age weighs in 1903 nearly six pounds more and is nearly two inches inches taller than the boy of the same age in 1874. A boy of eighteen is four and one-half pounds heavier and nearly an inch taller. The Rugby boy of thirteen in 1902 is two and one-half inches taller and more than six pounds heavier than the thirteen-year-old boy of a quarter of a century ago. The seventeen-year-old boy at Rugby is nearly an inch taller, though one pound lighter in weight, than his predecessor of twenty-five years ago. This very favorable comparison for our generation is undoubtedly due to the greater care that our growing children shall have more outdoor air and exercise than was formerly considered advisable.

The method of computing the comparative physical conditions of the two generations is typical of an order of ideas that has come to have more and more weight with experts in these matters in recent years. While it is not usually recognized the weight of growing children is a much more important sign of general health than any other set of objective or subjective symptoms that can be obtained. The family physician who can have placed before him a continuous record of the child's weight, taken at regular intervals say two weeks apart for several years, has more definite information than any amount of personal observation as to the child's habits in eating and sleeping, complaints of tired feeling and the rest that the mother can provide. If parents were instructed more carefully than at present to keep such a record physicians would not be so much in the dark as to the real condition of children's growth and health as they are at the present moment, because of the absence of specific data as to the progress of the child's development.

Needless to say, it is at the ages which have been noted especially at the public schools that this question of weight and health is most important. Just before and after puberty there are likely to be variations of weight that are significant of the conditions of the general health. If besides the fundamental natural change that is taking place in the organism there is a rapid growth, then there are likely to be calls on the child's nutrition that are very difficult for any but the extremely healthy natures to respond to satisfactorily. Rapid growth is of itself a very trying and exhausting process. When to it is added the demand made by puberty then great care must be taken to see that school exactions and even exhausting exercise shall not interfere with the important evolutionary processes at work.

Children who are growing rapidly at this period are very likely to present symptoms of lassitude, with a distinct disinclination to outdoor exercise and often also to study that are often thoughtlessly set down to laziness. Not infrequently, however, a capricious appetite will be found to be associated with these symptoms, with tendencies to eat large quantities at times and at others to present no desire for food. Careful inspection of the weight chart at these times will show that children or young folks are not gaining normally in weight as they should. When children are found to be below the standard of weight then they should not be tempted either to play or study overmuch, but should be allowed to follow their inclinations without fear of establishing bad habits. Rapid growth is of itself as hard work as any ordinary human being can be expected to accomplish with any amount of comfort and without injury to the delicate organism.

With regard to the standard of weight for growing children that usually given by authorities in the matter is that at five years of age a child should weigh about as many pounds as it is inches high. As a rule this will not be much over or under forty pounds. Children who come of large families should weigh something more than that. The rate of increase should be about two pounds for every inch of growth with a tendency for the weight to exceed this standard proportionately rather than to fall below it. When a child is rather heavier in proportion to its height than this standard it is a sign of good health. If the child is growing rapidly, it should not be allowed to fall much below it without being made to rest more than has been the custom before. A deficiency of weight in proportion to height is always an unfavorable sign. Any interruption in the progress of increase of weight, especially during the continuance of growth must be a danger signal that should not be neglected by those interested in the patient.

Just at this season of the year, when the stress of preparations for examination and of competition for prizes are apt to be felt so much by growing children the weight record should be carefully kept and frequently consulted. To be under the normal weight is to be especially liable to contract the infectious diseases for the resistive vitality is considerably lower than normal. The large insurance companies now insist that even individuals who have attained their growth are much more dangerous risks in the matter of tuberculosis if they are twenty pounds under the normal weight than if they are the descendants of families with tuberculous heredity on both sides of the house, when not intimately associated with those who are actually suffering from tuberculosis. The scale then will have to be considered an instrument of precision for diagnosis and especially for prognosis in the obscure conditions that so often occur in growing children. That it has not been thought so up to the present time is a matter for surprise and is rather due to the old-time tendency to adopt theoretical rather than practical aids in these important questions.

Public Hospital for Richmond.—Daniel G. Reid of New York has given $50,000 toward establishing a public hospital in Richmond, Ind., his native city. The terms are that $50,000 more shall be raised as an endowment fund, and the offer has been accepted. Mr. Reid will also erect a $75,000 church for the United Presbyterians in Richmond.

ECHOES AND NEWS.

NEW YORK.

Roosevelt Dispensary.—The orthopedic room at the Roosevelt Hospital Dispensary is being equipped and renovated by a sum of money given by a "Lover of Children."

Change in Public Health Law.—Dr. Daniel Lewis, State Commissioner of Health, last week announced the appointment of Dr. George H. Fox, professor of dermatology in the medical department of Columbia University, New York city, as consulting dermatologist for the State Department of Health. Dr. Lewis said: "I am calling the attention of local boards of health to the newly signed amendment to the Public Health law, which makes several important changes in the rules governing local boards of health. The principal change is a provision that hereafter local health officers in towns and villages shall be nominated by local boards of health to the State Health Department and shall receive their appointment for four-year terms from the State Health Commissioner. Such an officer may be removed under charges proven after a hearing, but the removal must be approved by the State Commissioner."

PHILADELPHIA.

Cerebrospinal Meningitis at League Island.—An epidemic of cerebrospinal meningitis has broken out among the naval recruits on the Minneapolis at League Island Navy Yard. At the time of writing this letter there have been four deaths from the disease and twelve cases are in the hospital. Tents on the land are being erected and the men from the ship are being transferred to them as rapidly as possible. The origin of the disease is still a mystery.

Reorganization of Health Department.—The first official acts of Dr. Edward Martin, Director of Public Health and Charities, are being received with hearty commendation by the press, the public, and the profession. Dr. A. C. Abbott, Professor of Hygiene at the University of Pennsylvania and City Bacteriologist, has been appointed Chief of the Bureau of Health with the combined salaries of the two positions. Dr. Montgomery H. Biggs has been selected as chief resident physician of the Philadelphia Hospital. The act of Dr. Martin that has called forth the heartiest approval was the choosing of a Consulting Board of Physicians. This board is composed of Drs. S. Weir Mitchell, Charles D. Penrose, J. William White, John H. Musser, Hobart A. Hare, and J. M. Anders. It is rumored that the new department will soon place consumption on the list of notifiable contagious diseases.

Philadelphia Academy of Surgery.—One of the most notable meetings in the history of the Philadelphia Academy of Surgery was that held on Monday, May 11. The audience included many of the most distinguished surgeons, both of this country and Europe, and the discussions were of the highest order. The paper of the evening was read by Dr. W. J. Mayo, of Rochester, Minn., who gave an exhaustive statistical and critical résumé of his 303 operations upon the stomach and first part of the duodenum. The diseases of the duodenum requiring surgical intervention he divided into two groups: (1) ulcer, and (2) those lesions associated with diseases of the biliary passages. He has never met with primary malignant disease of the duodenum. Of stomach lesions he considered only two—ulcer and carcinoma. Perverted gastric secretion is given the most prominent place among the conditions leading to gastric ulcer which was discussed under the following heads:

(1) Round ulcer, acute and chronic; (2) mucous erosions; (3) chronic ulcers with thickened bases. In speaking of the obstruction caused by gastric ulcer, Dr. Mayo stated that he had endeavored to ascertain the normal caliber of the pylorus under anesthesia by examining every case operated upon. The mean size was found to be about that of a dime. In some instances the opening was large enough to admit a silver quarter. In four cases malignant transformation of the ulcer was demonstrated. Simple gastroptosis is not considered to be a surgical condition. Among the 109 cases of cancer of the stomach there were 17 deaths. The hope of the future lies in early exploratory operations and these operations will depend upon clinical rather than laboratory diagnosis. The technic of the partial gastrectomy employed by the writer was detailed. He now performs entero-anastomosis in addition, as the death of two patients is attributed to the pulling loose of the sutures in the stomach by the weight of the filled loop of intestine below. Dr. Mayo said that it is surprising how many patients suffering from malignant disease of the stomach live more than one year after operation. Some of his patients have now lived more than three years since operation.

Discussion of Dr. Mayo's Paper.—Dr. A. Vander Veer, of Albany, said that ulcers on the posterior wall of the stomach form adhesions quickly and are difficult to differentiate from cancer. He no longer employs the Murphy button for gastro-enterostomy but does use it for entero-anastomosis. Waiting in cases of cancer for the diagnosis of the medical assistant is often disastrous for the particular kind of operation the surgeon wishes to employ. In doubtful cases exploratory incision is certainly justifiable and demanded, and serious cases are entitled to exploratory incision and, if possible, a palliative operation. Gastro-enterostomy is the best operation for cases of dilatation as the stomach will return to more nearly the normal condition if drainage be established. Pyloroplasty is really gastroduodenostomy and Dr. Vander Veer is not performing this operation so frequently as formerly, preferring gastro-interostomy instead. In closing, the speaker again emphasized the great value of exploratory incision in doubtful cases.

Dr. G. B. A. Moynihan, of Leeds, England, paid a high tribute to American surgery in general and to the excellent work done by Dr. Mayo in particular. Dr. Moynihan has the enviable record of 75 gastro-enterostomies with but one death. Pyloroplasty he has probably discarded permanently. He also stated that he would never again use the Murphy button. That instrument has been a necessary step in the evolution of this type of surgery but it has served its purpose. The greatest thing the speaker has learned from it is that its use is not necessary. He then explained the technic of gastro-enterostomy as he performs it since studying the effects of the Murphy button. The principal point is that he incises the outer coats of the stomach or intestine, retracts the edges of the incision and then excises the exposed area of mucous membrane instead of simply making an incision through it. This leaves a larger opening. He has never seen a duodenal ulcer except when accompanying a gastric ulcer and hence believes that the former is seldom primary. Gastric ulcer in a large majority of cases is multiple. He has operated on 14 cases of hematemesis. The patient from whom the ulcer was excised died. In the others gastro-enterostomy was performed and all recovered. In some cases it could not be told which one of several ulcers had been bleeding.

Dr. J. B. Murphy, of Chicago, said that the lesions of the stomach in the order of frequency as seen by the surgeon are carcinoma, ulcer, pyloric stenosis, and pyloric retention. To reduce the present mortality the surgeon must see them in the reverse order. As carcinoma develops from preceding pathologic conditions, these conditions, especially ulcer, must be operated upon early if the occurrence of cancer is to be prevented. Dr. Murphy called attention to the fact that the stomach wall is thickened in gastrectasis because of obstruction and mechanical relief is needed. The medical man says there is weakening of the wall and practises lavage, etc. Dr. Murphy emphasized the arguments of Dr. Vander Veer in favor of radical operation for malignant disease of the stomach.

Dr. J. M. T. Finney, of Baltimore, in speaking of pyloroplasty, said that the two main objects to be attended in benign pyloric stenosis are drainage and permanence and these are secured by the operation in question. He had words of commendation for the much-maligned physician who often obviates the necessity for operation which after all is the highest aim of both physician and surgeon. He would perform an early exploratory operation only after the advice of competent physicians. Dr. Finney has had elaborate studies made of the contents of the stomach and of the work accomplished by that organ in several cases after pyloroplasty and the results show that the stomach does normal work. This is considered to be a strong proof of the value of the operation.

Professor Von Mikulicz, of Breslau, also discussed the paper and gave some points in the technic of gastric surgery. He complimented American surgeons on their advancement in the art. He spoke almost entirely in German, hence his remarks were comprehended by comparatively few of the audience.

Dr. J. Chalmers DaCosta spoke of the magnificent work done by Dr. Mayo and the prestige thereby given to the surgery of this country.

Death of Dr. T. G. Morton.—Dr. Thomas G. Morton, the eminent surgeon and author, of Philadelphia, died last Wednesday at Cape May, N. J., from gout and cholera morbus, after a short illness. He is survived by a widow, one son, and two daughters. Dr. Thomas George Morton was born in Philadelphia on August 8, 1835, and was the son of Dr. Samuel George Morton, who was a noted physician previous to 1850. He was educated at the University of Pennsylvania, and was graduated in 1856. At the beginning of the Civil War he became actively identified with the establishing of military hospitals. In 1876 he was appointed a commissioner to erect a State insane asylum for the Southern District of Pennsylvania. He was chosen President of the Pennsylvania Society for the Restriction of Vivisection in 1880, and Vice-President of the Society for the Prevention of Cruelty to Children in the same year. He published many professional papers in the *American Journal of Medical Sciences*, together with works on the transfusion of blood and its practical application.

CHICAGO.

Respiratory Diseases.—The number of deaths recorded last week from pneumonia (178) was the highest ever recorded. In the weekly bulletin of health of May 9, the following comments are made regarding the prevalence of preventable respiratory diseases: Since the first of the year, 2,487 deaths have been attributed to this one cause (pneumonia), or nearly one-fourth (23.3 per cent.) of the total deaths from all diseases. Adding the deaths (448) from bronchitis, these two preventable respiratory diseases

have caused 269 more deaths since Jan. 1, than the aggregate of all the other important communicable and more or less preventable diseases, as shown by the following: Consumption, 1,139; acute intestinal, 423; typhoid fever, 239; diphtheria, 192; whooping cough, 165; measles, 158; scarlet fever, 148; influenza, 137; puerperal fever, 48; rheumatic fever, 40; smallpox, 39; erysipelas, 38. Total, 2,766; total bronchitis and pneumonia, 3,035.

Air Infiltration.—The municipal laboratory, under the direction of the Commissioner of Health, has been making experiments looking toward the prevention of air-borne diseases by filtration, and has published the following statement regarding its work: The end in view is to devise some simple and inexpensive means by which all the air that enters a building or any of its rooms may be filtered of outside impurities, and all that passes out may be similarly cleansed of impurities, including possible disease germs, acquired by respiration of or contact with the occupants. It has already been determined by the experimenters that passage through a single thickness of cheesecloth will do this to a satisfactory extent, and steps are being taken to equip the laboratory windows with such screens or filters.

Reversal of the Decision Against Dr. Webster.—In a suit for alleged malpractice against Dr. Geo. W. Webster, in which a jury awarded damages of $13,000, the verdict has been set aside by Justice Hutchinson, and a new trial granted.

Meeting of Illinois Nurses.—The Illinois State Association of Graduate Nurses held a business meeting recently. A committee on means of increasing the efficiency of those engaged in caring for the sick submitted its report, which was approved. The report recommended that applicants for admission to membership must have had two years' training in a general hospital, together with classified instruction during that period; that all nurses take a special course in the handling of contagious diseases; that chemistry and bacteriology be added to courses of instruction for nurses, and that all hospitals where nurses are trained be required to give special instruction in the practice and theory of cooking and in massage.

St. Ann's Sanitarium for Consumptives.—This sanitarium will be opened in about two weeks, and will be entirely in charge of the Poor Handmaids of Jesus Christ, the Order of Sisters who have charge of St. Elizabeth's Hospital on the West Side. With the help of a citizens' committee of 25, the Sisters raised a nucleus of $25,000, and purchased a ten-acre tract of land. The land was laid out into a beautiful park and plans were made for a hospital to cost $175,000, and to accommodate three hundred beds. The building is now finished. It is perfectly fireproof and equipped with the very best modern sanitary apparatus and arrangements.

GENERAL.

Site for New Manila Hospital.—Benito Lagarda, a Filipino member of the Philippine Commission, has given a site in Manila for the General Hospital which is being founded under the auspices of Bishop Brent, of the Episcopal Church.

Army Surgeons' Convention.—The Association of Military Surgeons of the United States assembled in Faneuil Hall, Boston, May 19 for the twelfth annual meeting. Among the guests were: Lieut.-Col. Costelli of the Italian army, Lieut.-Col. d'Angrier of the Mexican, Col. de Wreden of the Russian, Col. Rearson of the Canadian and Col. Charlton of the British army. Surgeon-General Wyman of the Medical Marine Hospital service, and S. J. Wise of the United States navy, were present. Brig.-Gen. Robert A. Blood, Surgeon General of Massachusetts and President of the association, said in his annual address that the membership was 1,200. He spoke of the criticism of the Medical Department during the Spanish war, and said that the charge of mismanagement was "unjust and untruthful," and the responsibility must be placed elsewhere. "If Congress goes to war without ample preparation," he said, "then the army must suffer. Congress voted for war before the Medical Department was ready. Will this happen again? I am afraid it will."

Tropical Worm Disease in Germany.—Advices from Berlin state that the Government Commission has been investigating the tropical worm disease which has attacked 20,000 Westphalian miners and reports that those only are affected who are obliged to remain constantly underground and do not get the sunlight. The sufferers will be isolated and cleanliness and sunshine insisted upon as the chief remedies. One hundred and fifty specially trained physicians are being engaged by the commission to fight the malady.

Tulane Hospital Bequest Upheld.—Judge Sommerville, of the Civil District Court, rendered an opinion in the case of the succession of Alexander C. Hutchinson, in which he decided against Edward A. Hutchinson, brother of the railroad magnate, and Mrs. Emma Hutchinson Moore, his sister. Edward Hutchinson and his sister contested one clause of the will of Alexander Hutchinson in reference to the enormous bequest made to Tulane University for the establishing and maintenance of a hospital in connection with the Medical Department. Mr. Hutchinson left a large sum of money for this purpose. Mr. Hutchinson's brother and sister brought suit to contest that clause in the will, contending that Tulane University or its administrators did not have the power of administering, controlling or disposing of the fund.

Judge Sommerville, among other things, said: "The conclusion thus reached, that the faculty of the Medical College of Louisiana is no longer in existence as a corporation, and that the prohibition against it receiving by bequest died with the corporation, really disposes of plaintiff's first ground of complaint against the will of Mr. Hutchinson, to the effect that it contains fidei commissum. The donation is to Tulane direct, and in full ownership, and not for the benefit of a third person. Its Medical Department is not a third person; it is one of the essential and component parts of Tulane University. Tulane would not be a modern university of learning without a medical department."

Legislation for Children.—The establishment of the Children's Court in New York, the separation of children and adults in penal institutions and the removal from the custody of the police of children awaiting trial, are only parts of the new system of legislation for the safeguarding of children which has been much advanced in several States this year.

In Michigan a constitutional amendment has been adopted empowering the legislature to provide for indeterminate sentences and paroles for child prisoners.

In Massachusetts the new law includes station houses in the number of institutions to which a child under 12 cannot be committed.

Pennsylvania adopted in 1901 a new children's law as to dependent, neglected and delinquent children under 16, creating children's courts and probation officers, prohibiting the commitment of any child

under 14 to jail or police station, and providing for State supervision of juvenile reformatories.

Wisconsin adopted a law in the same year establishing a juvenile court with power to appoint probation officers, requiring children under 16 to be brought before this tribunal for any criminal offence and prohibiting children under 14 from being committed to police stations, or children under 16 from being imprisoned with adults.

In Ohio the commitment to the State reformatory of male prisoners over 16 and under 21 who have been convicted of felony has been made mandatory.

In practically all the States where new legislation on the subject of children has been adopted it has been in line with the legislation of New York separating the cases of children from those of adults in criminal proceedings.

A bill establishing a children's court for Brooklyn was passed by the Legislature, and likewise a bill extending the probation law to all courts in the State. Under it the age limit of 16 years is removed.

Maryland Medical and Chirurgical Faculty.—A bombshell was exploded at the morning session of the Medical and Chirurgical Faculty last week in the shape of a tender of the resignations of four hold-over members of the State Board of Medical Examiners—Drs. Eugene McE. Van Ness, W. W. Wiley, J. McPherson Scott and F. B. Smith. At a previous executive session Dr. L. A. Griffith, of Upper Marlboro, had spoken at length on the refusal of the District of Columbia to recognize the Maryland medical laws to the extent of permitting registered Maryland physicians to practice in the District, and criticising the Maryland practice of giving such privileges to the District doctors in the absence of reciprocal advantages. Dr. Griffith was later elected a member of the State Board of Medical Examiners, and in view of his previous remarks Drs. Van Ness, Wiley, Scott and Smith considered his election an indorsement of his criticism, which, they felt, was to some extent directed against the board. They accordingly sent in their resignations.

Dr. William H. Welch spoke briefly on the resignations, saying that the gentlemen had acted under a misapprehension, as the faculty had not had the remotest idea of criticising the board. He offered the following resolution, which was unanimously carried by a rising vote:

Resolved, That the Medical and Chirurgical Faculty of Maryland has received with regret the tender of the resignations of Drs. Van Ness, Scott, Wiley and Smith from the State Examining Board and desires hereby to express its appreciation of the integrity, the impartiality and the intelligent, arduous and faithful labors of the members of this board.

The faculty would, therefore, be most reluctant to accept these resignations and earnestly urges these members, in whom hereby full confidence is expressed, to withdraw their resignations and to continue in the discharge of duties of the highest importance to the interests and welfare of the medical profession of this State.

Tuberculosis and Smallpox in Maryland.—The subjects of tuberculosis and smallpox occupied the rest of the session. Dr. Henry Barton Jacobs read a paper on "Our Need of a Mountain Sanatorium for Indigent Consumptives," which he showed to be a most urgent one. He referred at length to the nucleus for such a hospital which has been formed by the conditional offer of $25,000 by a friend of the Eudowood Sanatorium, at Towson, and the collection of $4,000 additional by the Quarter Club. This club and the Hospital for Consumptives will hold a large concert this week at Music Hall for the purpose of further swelling the fund. Dr. Jacobs advocated a public subscription for the purpose, and said that if $10 apiece would be gotten from each of the 500 churches of Baltimore it would go far toward making the movement a success.

Dr. Jacobs' paper was followed by a discussion on methods for the prevention of the spread of tuberculosis in the city and State, led by Dr. W. S. Thayer and participated in by Dr. Jacobs, Dr. William H. Welch and Dr. J. S. Fulton.

Dr. Thayer advocated compulsory registration of all tuberculosis patients, as is now done in New York, and the enforcement of the existing anti-spitting laws. He also thought these laws should be extended to the farthest degree. He urged the appointment of lecturers by the faculty to go before the county medical societies and the rural school teachers and give comprehensive instruction on the nature and means of preventing tuberculosis. There should be, he said, referring to Dr. Jacobs' paper, two classes of sanatoria—one for advanced and incurable cases, and the other for the cure of such incipient cases as are amenable to treatment. Dr. Welch said it had been demonstrated at Breslau that loud talking and coughing cause the emission of tubercular bacilli, but that the fact remains that the greatest source of infection is from the dried sputum of those afflicted with the disease, and urged the adoption of the measures of registration and segregation already advocated.

Obituary.—Dr. John Van Harlingin, a well-known Brooklyn physician, is dead of heart trouble at his home, No. 195A Cumberland street. He was born at Millstone, N. J., fifty-seven years ago, and was a graduate of Columbia University.

SPECIAL ARTICLE.

A PRELIMINARY COMMUNICATION ON THE ETIOLOGY OF VARIOLA.*

BY DRS. WILLIAM T. COUNCILMAN, GEO. BURGESS MAGRATH, WALTER REMSEN BRINCKERHOFF,
OF BOSTON, MASS.

IT has been thought best to present this preliminary statement of certain observations which have been made in the course of an investigation on the pathology of variola. The investigation was made possible by the liberal and enlightened policy of the health department of the city of Boston, which gave the investigators access to material for anatomical and histological study, and opportunity for the clinical study of the disease. Our thanks are in the first place due to Dr. S. H. Durgin and his associates in the health department. A full report on the disease, with detailed descriptions of the lesions, will be the subject of a later publication.

In 1892 Guarnieri described in the lesions, both of vaccinia and of variola, certain peculiar inclusions in the epithelial cells. These inclusions, regarded by Guarnieri as living bodies, have been studied by many investigators, and a

* Reprinted in full from The Journal of Medical Research, May, 1903, by courtesy of the Editor.

variety of opinions formed concerning them. They have been regarded as organisms, as leucocytes, or fragments of leucocytes, which have become included in the epithelial cells, and as products of degeneration peculiar to the disease. The most valuable work on the matter has been done by Wasielewski, who regarded the inclusions as organisms. The life cycle of the supposed organisms was not established, and the investigations up to the present have not presented enough evidence for the acceptance of these bodies as living organisms.

In the lower layers of the epithelial cells of the skin, before there is any anatomical evidence of vesicle formation, there are found small, structureless bodies, from one to four microns in diameter. The epithelial cells at this time present little or no evidence of degeneration. The bodies, one or more in number, lie in vacuoles in the cells. The vacuoles are at first but little larger than the enclosed bodies. The bodies increase in size, and evidence of structure, consisting of granules more distinctly stained and lying in definite spaces, begins to appear. With the increase in size of the body, the vacuole of the cell enlarges until a large central space around the nucleus is formed. At this time there is but little evidence of degeneration of the nucleus. The body continues to increase and becomes granular, the granules lying in a reticular structure. The form of the larger bodies is irregular and suggests an ameboid character. They may become as large as or larger than the nucleus of an epithelial cell. A definite nucleus has not been made out in them, unless the reticular structure which stains more intensely than the rest of the body be so considered. At this time segmentation takes place, leading to the formation of small, round bodies about one micron in diameter. All this is best seen in the acute hemorrhagic cases. It may also be seen in the advancing edge of a young vesicle, the bodies becoming larger and more definite in structure as the formation of the vesicle advances. The bodies in the cells we regard as living organisms, and the gradual growth and final segmentation as a cycle in its life history. Up to this time the nuclei, although showing such evidences of degeneration as the massing of chromatin in the periphery, are not greatly altered.

At the period of segmentation, and when most of the intracellular bodies have disappeared, small round or oval ring-like bodies appear in the nucleus. These increase in size and acquire a definite structure, consisting of a series of vacuoles around a large central vacuole. The rim of the central vacuole stains more distinctly than do other parts of the body. One or more of these bodies may appear in a single nucleus. When several are present they are smaller, but have the same structure. The bodies become larger, the nuclear rim grows less distinct, and finally disappears, and the body lies in a completely degenerated cell, or this breaks down, setting free the body. With the growth and development of the intranuclear body, the vacuolar structure becomes less evident, and finally a structure is formed which contains numerous fine vacuoles. At this time small circular bodies begin to appear in it, and groups of these are surrounded by a faint ring, which probably represents the remains of the body in which they were formed. The circular, ring-like bodies have a central dot. They are one to one and a half microns in diameter, and are seen with great difficulty. They were first found in a photograph of the tissue. Single ones and clumps are also found.

We regard this intranuclear body as a further stage of development of the intracellular body, and as representing a second complete cycle of development. It develops from the spore-like bodies produced by the segmentation of the intracellular body, which pass into the nucleus. The spores which are formed from its segmentation we consider the true infecting material of variola. In a case of hemorrhagic smallpox we have found bodies similar to these spores in a blood vessel of the skin.

In vaccination of the rabbit and calf, Doctor Tyzzer, who has been following this line of investigation, has found bodies similar to those met with in the first cycle of the smallpox organism. The complete cycle of this organism, which corresponds to the primary cycle of the smallpox organism, has been traced. Doctor Tyzzer has never found any of the *intranuclear* forms. The inoculation of the rabbit, with contents of variola pustules, gives rise to bodies similar to those in vaccinia and in the first cycle of variola. Here, also, it has not been possible to follow the complete cycle. The *intranuclear* forms have not been found, although carefully sought for. Inoculation of the monkey, with contents of variola pustules, produces lesions which we must regard as variola, and in these the *intracellular* and the *intranuclear* cycles are found, occurring in the same sequence as in man. From this we regard it as extremely probable that in smallpox the complete development of the parasite through two cycles takes place, and that in vaccinia the primary cycle only. Definite conclusions, on this, however, can be reached only by further study of vaccinia in animals subject both to vaccinia and to variola. The variola spore, in such an animal as the calf, finds conditions which allow of the development of the primary cycle only. The spore-like body, which is formed in this cycle when introduced into an unprotected human being, goes through the same development, producing vaccinia.

In variola the entire process of development of the parasite is concluded with the formation of the young vesicle. The spores are present in the contents of the vesicle and of the pustule, but their recognition among the detritus of cells and exudation is impossible unless differential methods of staining them shall be discovered. We have also seen forms of the intranuclear bodies, which seem to show that the intranuclear cycle is sexual in character.

CORRESPONDENCE.

OUR BERLIN LETTER.

[From Our Special Correspondent.]

BERLIN, GERMANY, April 25.

AMERICAN PRACTITIONERS' SOCIETY—VERITABLE MECCA FOR MEDICAL WORK—BLOOD CULTURES AND THEIR VALUE IN DIAGNOSIS—BERLIN FOR PATHOLOGY, NEUROLOGY AND DISEASES OF THE STOMACH; VIENNA FOR INTERNAL MEDICINE AND GENERAL ROUTINE WORK—UNREMUNERATIVE PRACTICE—PRE-ASEPTIC SURGERY—KRAUS SUCCEEDS GERHARDT—TAKING HIS OWN MEDICINE—QUACKERY RAMPANT—LARGEST HOSPITAL IN THE WORLD—ARONSON'S SCARLATINA SERUM—NEW METHOD FOR DETERMINING RENAL SUFFICIENCY—EXODUS OF MEDICAL MEN.

A NEW feature has quite recently been added to the social life of the American physicians temporarily residing in Berlin, by the organization of the "Practitioners' Society," whose object lies in furthering the social and intellectual intercourse among the English-speaking professional men of this city and in disseminating such knowledge as may be of general interest. This gathering has been hailed with delight by all newcomers and appreciated as a long-felt want by our more acclimated colleagues, and one wonders indeed why, with 50 to 100 medical men here the year round, the idea has not been conceived before. With American boarding-houses, newspapers and other American commodities galore, the weary traveler, reaching this veritable Mecca for medical work, has hitherto felt reasonably at home, but now will appear as if transported to his native soil for one short evening in the week at least. The Practitioners' Society is a thoroughly informal affair; it meets every Saturday night at the Terminus Hotel (Friedrichstrasse, 101) and the members pass the time by discussing what they have seen and heard of new things in the medical world or else amuse themselves in lighter vein. The recent arrival in Berlin, armed with letters of introduction, is only too eager to meet the gods he worshiped in his text-books but he will soon recognize that he is still at a distance from the fountain of knowledge for which he thirsts. He generally passes through three stages, first, like a sailor stranded on a desert isle, he knows not whither to turn; then he can be seen to take courses which he does not want and which turn out to be "gold-bricks," until finally, after a waste of more or less valuable time, he packs up his things to go through the same performance in another city, or else gets settled. The Society will enable him to abbreviate the first and second stage, as he will always meet classmates or colleagues there who are eager to set him right.

The meeting of last Saturday was well-attended and of exceptional interest. Dr. E. Libman, of New York, gave a short résumé of the technic of blood-cultures and of their value in diagnosis. The importance of a negative result was especially emphasized, as a persisting fever without bacteria in the blood would indicate that a focus had formed elsewhere and it is the duty of the physician to search for this focus. Dr. E. Aronson, of New York, gave an acount of his experience with the Sahli test-meal in the diagnosis of gastric disorders. Aside from lacking homogeneity, the soup recommended has proven very troublesome to make and the results are far from accurate, so that it is questionable whether it will come into general use. The discussion then drifted to that burning and oft-time ventilated question, which of the two cities, Berlin or Vienna, offers the best facilities for medical study. The general consensus of opinion seems to be, that the latter deserves first prize for general work and Internal Medicine, while in Berlin the specialties, among them Pathology, Bacteriology, Neurology and Diseases of the Stomach in particular, receive more attention. In Surgery, both places present equal advantages,—one is almost inclined to say disadvantages, for many of the older celebrities only too clearly show that their training dates from the pre-aseptic days.

In place of the late lamented Gerhardt, the Berlin faculty has found a successor in the person of F. Kraus of Graz, of whom it can justly be proud. His literary work having been chiefly confined to Physiological Chemistry, he is not so well known to Americans as internist. In spite of excellent clinical material, Internal Medicine in Berlin has hitherto been taught in a rather dry and uninteresting fashion, so as to drive the majority of men to other cities. Kraus has already won the hearts of the Americans and his profound knowledge and excellent address have filled his clinics to the dismay of the other heads of the department. Yet like that great, lamented master of Surgery, Billroth of Vienna, he feels himself upon strange soil and the jealousy between German and Austrian does not fail to embitter his position.

That physicians must sometimes drink their own medicine and experience the effects of the knife they have so often wielded, is true even here in Germany. Freund, the noted gynecologist of the Krankenhaus Friedrichshain, recently went through a serious operation for gall-stones, performed by Körte. To the gratification of his many friends and admirers, his recovery was perfect and he will soon be back at his post of duty.

It is a pity to see that in a country where so much care and attention is devoted to the excellency of medical education, the financial condition of the physician should be so alarming as it is here, in this very capital. The number of doctors who do not earn the butter for their bread is legion and the recent Narden-Kötter trial has disclosed the fact that many will stoop so low as to enter the services of quacks to make their living. This has astonished the German public no less than the foreigners, who are accustomed to regard the professional men here as bound down by especially severe rules of ethics. But their halo already shines less brightly and a grand crusade against the ever-increasing order of quacks is afoot. With private practice poor, the hospitals are however doing "a rushing business," and the Rudolf Virchow Krankenhaus in the Seestrasse, the fourth city hospital in Berlin, and the largest institution of its kind in the world, is rapidly approaching completion.

The spring vacation is almost over and the exhausted students who have sought rest from their arduous duties away from the city with anything but ideal weather, are slowly and sadly tramping back for the summer semester. The list of matriculants at the Berlin University is a long one and a large number of Americans were present among those who attended the opening ceremonies and who were permitted to shake hands with the Rector in return for their promise to lead an honest and upright life while connected with the University. The medical world has not yet recovered from the holiday spirit which has permeated all its ranks and there is stagnation in the field of advance.

More critical judgment is taking the place of the enthusiasm manifest in the early part of the year for Aronson's serum for scarlatina and septic conditions. Though opposed by the Vienna school, Aronson has found a warm supporter in A. Baginsky who is favorably impressed by some of the results he obtained in scarlatina. The serum is manufactured by passing different colonies of streptococci several times through the bodies of larger animals and then withdrawing their serum. In many cases a slow defervescence sets in and the patient

remains free from complications but in no instance was the effect so marked as with diphtheria antitoxin.

A new method of determining renal sufficiency is suggested by Klemperer, more on theoretical than practical grounds, for the number of cases treated are really too few to enable a definite judgment upon the value of the method. He isolates the urochrome from the total amount of urine excreted during 24 hours by a simple chemical process and then approximately determines the percentage by means of a color-scale. In health 0.8 to 2.7 grams of this substance are excreted daily, while with appreciable destruction of renal parenchyma lower figures are obtained.

With the two large medical meetings at Madrid and Washington close at hand, one is not surprised to notice a general exodus of medical men. Ewald, of stomach fame, has prepared an exhaustive paper on the diagnosis of gastric ulcer for Washington; he feels flattered by the invitation extended to him and is anxious to know the country, since he has become acquainted with so many Americans in his course. It is gratifying to note the respect with which Americans are treated and their medical training is being appreciated more and more. It will be many a day, however, before German supremacy in pathology is lost, owing to the large number of autopsies, which are possible only here. The clinical material, too, lends itself better for study, since more docile. Withal, it is generally predicted that the day is not so far off when our German brothers will make pilgrimages to the United States in search of knowledge.

TRANSACTIONS OF FOREIGN SOCIETIES.

French.

THE DEFENSE OF THE ORGANISM IN THE NEWLY BORN—SUTURE OF THE EXTERNAL ILIAC ARTERY—HEMORRHAGIC PACHYMENINGITIS WITH CHROMODIAGNOSIS.

MM. CHARRIN and DELAMARE, at the Academy of Science, March 23, 1903, read a paper on the defense offered by the organism in the newly born, establishing the following points: In the newly born among the offspring of diseased parents, the frequency and gravity of certain morbid processes are incontestible. For an explanation of these facts, ordinarily one invokes various factors, for example, delicacy of the tissues, failure of immunity notwithstanding favorable surroundings, etc., but the authors have sought to elicit more precise causes. Contagion itself, indeed, plays an important part, but it is less important during the age of play than that of school life or of boarding-school life. On the other hand, the attenuating influences of the exterior protective elements, like sunlight, warmth and oxygen, is exercised indefinitely in all ages. On the whole examination of the various means of defence established at the various portals of entrance reveals the following important defects. The sweating function of the skin before the fifteenth day of life, especially in athrepsic parents is especially defective. The sweat in its reaction, composition and excretion constitutes a defence both chemic and mechanic. Insufficiency of it explains at least in part why one observes so often the various cutaneous infections of which authorities like Beill have demonstrated an external origin. It is probable, moreover, that in interfering with thermogenesis by evaporation and vasomotricity the imperfection of this secretion takes part likewise in the causes of general predisposition. More frequently, indeed, than through the skin, bacteria enter through the digestive and respiratory tract. During the first month of life, intestinal disorders are common. With regard to this point the authors have obtained encouraging results by means of extrabuccal alimentation with the aid of various medicines, sugars, fats and peptones. The vigor of young tissues, under the influence of rest and of cessation from irritation inherent in daily function tends to rapid repair. Under the services of the alimentary canal the mucus protects the economy, chemically and physically, forming a microbicidal covering. Unfortunately, this substance is less abundant in the new-born than later in life and may be appreciated by chemical and histological examinations. Not only may gastro-enteritis be capable of modifying its local and proportionate secretion, but also it may fail as a whole, as has been recognized by Guillemonat in the last portion of the ileum, exactly where the principal alimentary substances are transformed and should not be retained in the canal. The authors have been observing the peculiar disposition of mucus described by Disse, but they have proved that during the first weeks of life the mucus appears chiefly upon the summits and lateral aspects of the villi, and does not, as a rule, descend as deeply as it does in adults, namely, to the bases. This disposition of the mucus, combined with its quantitative insufficiency makes it possible to understand why such substance as iodide of potash or the toxic secretions of microbes imprisoned in the loops of intestine closed at both ends when one has gathered these loops in a very young animal, escape and promptly gain a subadjacent layer. This escape is also facilitated by the early development of the absorbing organs, namely, the villi, valvulæ conniventes, and the like. On the other hand, the muscular coat of the intestine, which should be available to discharge material for the purpose of protection is much less developed. It is easy to notice certain babies sleeping with their mouth wide open or half open, causing thus the air to reach the alveoli too dry and too cold and without the aid of germicidal mucus in the nasal fossæ. In this mucous covering there are discernible other defences. Thus, at birth, and comparatively speaking, somewhat later, it is not rare to establish the scantiness and the simplicity of the various diastases, which should be abundant and complex, for example, trypsin, which is largely concerned in attenuating the bacterial poisons, of which several are present even at birth. This relative deficiency is evidently due to a somewhat incomplete development of certain glands or perhaps to the milk diet, because if it is granted that the food may make the ferment, milk alone does not tend to develop the various forms of diastases. Thus, in the new born the portals of entrance are little coated. Moreover, as the deeper tissue has the preference among the male and female children of diseased women, it is not unheard of to discover equally various favorable conditions for the development of disease. These authors have established that such offspring from diseased parents, themselves debilitated, lose by the intestines ten times more proteid substance than a healthy individual. Moreover, the proportion of nitrogen in the urine to the total nitrogen and of carbon to the nitrogen is greater than unity. Moreover, the kilogram of living material, instead of being represented as is the case in the normal state by six decimeters, corresponds to seven or eight, a proportion which lessens radiation, but in order to maintain life the tissues are obliged to engender heat, and as in depleted nurslings, heat is more easily lost and is produced with a combustible which, because the appetite is lacking, and because of intestinal losses and because of errors in digestion, is less abundant and less utilized. Consequently, the cellular vitality is very much overworked. Thus, in virtue of these efforts, one sees hypothermia, and on account of this overworked condition, a decrease in the alkalinity of the body fluids and a decrease in the bactericidal function, and an increase in the organic poi-

sons, often shown by a diminshed urinary toxicity. One must not ignore that in the midst of these cases which are so fitted to hasten an unfavorable outcome, the evolution of attenuated germs, that is, to a change for the better, is prevented precisely by this overtaxed condition, this hypothermia, this diminution in alkalinity, this modification of auto-intoxication, modifications which in words so vague at our command, substitute exact conditions which in their mechanism become susceptible of improvement. In the nurseries of these observers, under the influence of these conditions and of other manifest factors, due to the wasted condition of mothers, their offsprings were given to nurses who were able to bring up their own children. Thus they received the same milk, breathed the same air, and underwent improvement; but without exception the offspring of the sick women are commonly victims of various affections, while the offspring of the nurses were without these affections. In other words the elements of contagion, direct and external, were alike for both series of children; consequently one is obliged to believe that the former group were eminently predisposed. Thus, in the newly born, sometimes in virtue of open doors of entrance, sometimes because certain of their viscera are defective, and sometimes because their resistance to various pathogenic agents is deficient, it is not surprising to find relatively a series of diseases which run a severe degree more frequently than later in their lives.

M. DELBET, at the Society of Surgery, March 25, 1903, reported an observation in behalf of Wiart. It concerned a wound of the external iliac artery which occurred during an operation for radical cure of inguinal hernia, for which the writer was called in in an emergency. Upon removing the packing which was placed in the wound to stop the hemorrhage, Wiart found upon the external iliac artery a wound 5 mm. long. He was able to produce a complete hemostasis by making a suture of the wound, after having placed upon the vessel two Kocher clamps covered with rubber, one above and the other below the lesion. Eight months later he was able to prove to himself that the artery was performing its duty up to the femoral arch, but the pulsations were no longer existing at the bifurcation of vessel. His suture passed through and through the cuts of the artery, which made him think that they caused therefore feels that it is necessary to avoid perforating a thrombosis which finally resulted in obliteration. He sutures in work of this character.

Tuffier stated that for a long time he has been convinced that humidity in the atmospheres of operating-rooms diminshes very largely the activity and thus the number of the germs which are in the air. Therefore he has lately made use of vaporizations of water and then of peroxide of hydrogen and has been satisfied with the results.

M. FORNI, at the Medical Society of the Hospitals, March 27, 1903, communicated in the names of Chauffard and himself notes concerning the case of a woman, fifty years old, who was brought to the hospital in coma, and died at the end of eleven days without having regained consciousness. Four days before her death the temperature rose suddenly to 36.5° and then to 41.5° C. A lumbar puncture was made on the eighth day of her disease, and resulted in the withdrawal of an amber-colored fluid containing a little hemoglobin and presenting a slight degree of lymphocytosis. Two days afterward there was withdrawn, on the contrary, a clear liquid not containing hemoglobin, and showing comparatively a normal lymphocytosis. At the autopsy there was found, as had been supposed during the first examination of the fluid, a hemorrhagic pachymeningitis, with clots covering the upper surface of the left hemisphere. The arachnoid showed no alterations, likewise the piamater. The sudden elevation of temperature seen during the last few days of life may be explained by exicitation of the thermic sense, situated at the level of the hemorrhage, and then by the fermentation of bacteria, whose action was probably evanescent.

SOCIETY PROCEEDINGS.

FOURTEENTH INTERNATIONAL MEDICAL CONGRESS.

Held in Madrid, Spain, April 23 to 30, 1903.

(Continued from Page 912.)

SECTION ON THE PRACTICE OF MEDICINE.

The most remarkable feature of the day was the fact that the session was entirely monopolized by the physicians belonging to the Latin races, and that the communications dealt largely with diseases endemic in Southern Europe. Prof. Maragliano, of Italy, the honorary president, called the attention of the Spanish members to the fact that the Congress had lost the true character of an international affair for the rapid and concise interchange of views—but without effect.

A New Symptom in the Diagnosis of Arteriosclerosis.—Dr. S. Miraglia, of Naples, said that the movability of the apex beat offered a symptom of importance, hitherto not described in the diagnosis of sclerosis of the root of the aorta. Normally the impulse lies in the fifth space, between the mamillary and parasternal lines, and migrates, in the left lateral decubitus, to a position midway between the anterior axillary line and the mammillary. Its displacement is about 3 cm. In sclerosis of the root of the aorta, this displacement may amount to 4 or 5 cm. and the impulse may appear in the axillary line beyond. The phenomenon is due to the fixation of the base of the heart, as a pivot, a firm center, around which the heart swings, and, secondly, to the elongation of the heart which expresses the hypertrophy of the left ventricle. No other pathological condition presents this symptom in equal degree. In the "nervous heart" of the young there is, indeed, a somewhat increased displacement, but it is far less in degree. On the other hand, advanced cases of tuberculosis or marasmus also present the phenomenon, owing probably to the decreased resistance of the lungs, but here also there is no possibility of confusing the conditions.

Cinnamate of Soda in Tuberculosis.—Dr. A. S. Herrera, of Madrid, said that all the forms of medical treatment hitherto employed in the cure of tuberculosis had, by general consent, been discarded. The last vaunted method, that of Landerer, had given him good results in 20 per cent. of the cases of a very mild type. He had, however, discovered a modification of the method, which enabled him to achieve a cure in 8 per cent. of the cases of advanced tuberculosis with cavity formation. He uses Landerer's solution of 4 of cinnamate of soda to 100 of water, but employs the solution hypodermically instead of intravenously. He can thus give doses of 10 to 20 times the amount, without ill effect. He begins with 3 c.c. and increases up to 20 c.c. daily, which represents the normal dose. He has, however, given 70 c.c. in bad cases without ill effect. The improvement in the symptoms is prompt, and affects first the fever and the marasmus, then the cough. At the end of three months the bacilli have generally disappeared from the sputum. They may persist, however, as long as five or six months. All of the cases which resulted fatally in spite of this treat-

ment presented previous involvement of the gastro-intestinal tract, amyloid, etc., and died, not of tuberculosis but of marasmus.

Treatment of Rheumatic Affections.—Dr. R. Bloch, Austria, asserted that the hypodermic injection of tropacocaine, in the form of a Schleich infiltration, accomplished therapeutic results not approached by any other method in the relief of the agony of neuralgias and myalgias of rheumatic origin. The injection should be made in the area of greatest tenderness to pressure, and varies slightly in technic from that practised for surgical purposes inasmuch as it demands the injection of as large quantities of the fluid as possible, with a syringe capable of exerting powerful pressure. The method is successful in acute, subacute, and chronic cases in which fibroid changes have not already taken place; furthermore, it offers a sign of diagnostic importance, since it offers relief only in the neuralgias of rheumatic origin. In rheumatic affections of tendons and joints it is available only in very light cases, with small amounts of exudation.

Prof. Castellvi, of Madrid, said that his method of obtaining analgesia in all the forms of neuralgia by the injection of pure oxygen gas at high pressure into the tissues also gave admirable results in the pains of chronic rheumatism and arthritis deformans. He illustrated his instrument, which consists essentially of a metal cylinder capable of holding the gas at high pressure, of a simple apparatus for regulating the flow of the gas, and of rubber tubing which connects the cylinder with a fine hypodermic needle. The injection is practised preferably at the point of emergence of the nerves. The dose varies from 200 to 1,000 c.c. of the gas, and must be empirically determined. Several injections may be made if there are seats of pain in various parts of the body. As a rule the resulting analgesia, which the author attributes to the chemical action of the gas, is limited to a zone of small radius from the center of injection. The pain begins to diminish about 15 minutes after injection, and the effects generally last 24 to 48 hours. It is almost specific in neuralgias, *e.g.*, sciaticas.

Radioscopy in Pulmonary Tuberculosis.—Dr. Hennecart, of Sedan, said that a study of 32 cases of pulmonary tuberculosis with the help of the X-rays had convinced him of its efficiency as a diagnostic aid. He found in 30 cases a diminution of clearness at the affected apex. In 14 cases, he found a decreased area of pulmonary illumination (Williams' sign). In 29 cases, he observed a diminished excursion of the diaphragm of the diseased side in inspiration.

Pathogenesis of Cardiac Arhythmia.—Dr. Espina and Dr. Castellino of Naples reviewed the present views as to the etiology of arhythmia.

Injection of Oxygen.—Dr. Castellvi spoke on the relations between diabetes, acromegaly, and Graves' disease. Dr. A. Lorand, of Carlsbad, presented a suggestive paper in which he first pointed out that in all three of these syndromes vascular glands were involved, the thyroid, the frontal lobe of the pituitary, and the islands of Langerhans in the pancreas. Further, the glands are often simultaneously diseased. In Graves' disease, in which he asserted the thyroid was invariably diseased, glycosuria is not infrequent. Glycosuria, indeed, occurs only in conditions marked by hyperactivity of the thyroid. After infectious diseases (Roger and Garnier) in certain forms of poisoning, nervous shocks, chlorosis and primary syphilis (Engel-Reimers) and the lactosuria of pregnancy. Thyroid extract produces glycosuria and even diabetes at times. On the other hand, glycosuria is never associated with atrophy of the thyroid—as in myxedema, hereditary syphilis and the marasmus of cancer and syphilis. Both diabetes and Graves' disease are rare in childhood.

Prof. Codina Castellvi, of Madrid, said that the paper was most suggestive. He believed that the trials might be increased by the addition of paralysis agitans.

Dr. Lorand said that the course of a previously existent diabetes is generally profoundly modified by the supervention of such conditions as tend to produce atrophy of the thyroid, *e.g.*, tuberculosis and cancer. A diabetic may become tuberculous or cancerous and the diabetes is improved. The reverse does not occur. Furthermore, the thyroid has probably a pronouncedly antibacterial function, as is indicated by the action of its extract in vitro. It is rarely the seat of tuberculosis, of syphilis, or of abscess, it swells up in infectious diseases. Secondary atrophy of the thyroid, as in cancer, and tuberculosis is marked by an indurated edema, like that of cretinus, and a similar loathing for albuminous foods.

This paper was followed by a prolonged discussion on the diet in infectious diseases, which was rather excited, but presented little that was new. The Madrid school, notably Castellvi and Garcia, insisted that the condition of the intestinal mucosa in these diseases dictated a fluid diet, which clinically gave the best results. The discussion was robbed of the importance which had been attributed to it by the absence of the chief exponents, Prof. Quievolo, of Pisa, and Ewald, of Berlin. Prof. Maragliano said that Quievolo had achieved excellent results in typhoid by means of rectal feeding.

Ichrohemoglobinuric Fever Calabria.—Dr. Francesco presented a paper of local interest.

Clinical Forms of Hyperchlorhydria.—Dr. Morena, of Madrid, said that hyperchlorhydria was never a disease, but only a symptom, representing either a nervous derangement of the stomach, an organic disease, or a constitutional disorder. Hence the treatment is extremely difficult, and in most cases is of the symptomatic order. The prime condition is the exclusion from the diet of all irritant or stimulant substances, the alkaline carbonates and earths, and mineral waters are of great assistance. Gastro-enterostomy is advisable in severe cases with myasthenia and dilatation, and in cases which for various reasons cannot submit themselves to proper dietetic therapy.

Prof. Maragliano protested urgently against these conclusions. Hyperchlorhydria, per se, is invariably the manifestation of a functional derangement, never of anatomical change. Hyperchlorhydria is subject to nervous influences, and to hypnotic suggestion. It is almost invariably controllable by medical treatment, atropine, etc. Surgical intervention is absolutely wrong in cases of secretory anomalies of the stomach. It is probable that we very much overestimate the importance of quantitative changes in the hydrochloric acid, as Riegel himself admits.

This paper was followed by a prolonged discussion by the Italian and Spanish physicians on Pellagra.

Radiography in Biliary Lithiasis.—Dr. Gasteln and Dr. Yogue, of Madrid, had radiographed a large number of cases, subsequently submitting their finding to the control of operation or autopsy. Radiography does not permit of the differentiation between stones in the gall-bladder, and dense pericystic adhesions, and hydatid cysts. Thus it fails just where its aid is most in demand.

Rheumatism.—Dr. Ibauez, of Valencia, asserted that rheumatism is not of microbic nature, but due to faulty metabolism with accumulation of uric acid. All the forms of rheumatism and gout are manifestations of the same disease.

Salocreol.—Dr. Guezda, of Berlin, said that this

new drug was a synthesis of the various phenols of creosote and salicylic acids to form an ester. In v. Leyden's clinic it has proven of great value in the treatment of rheumatic joints, of scrofulous glands, and of the adenopathies of measles and scarlet anginas. It may be painted on or rubbed in as the degree of tenderness of the parts dictates, and so applied appears in the urine in a few hours. It has proven of chief value in reducing or abolishing the tendency to suppuration of the acute and chronic glandular swellings.

Blood Enemas in Chlorosis.—Dr. Mariani, of Madrid, said that he had experimented for twenty years in the treatment of anemias by this method. It is inefficacious in the symptomatic anemias, but in chloranemias of the most advanced type, which have resisted every other form of treatment, it gives invariably good results. The blood of a sheep, aseptically secured, fresh each day, and defibrinated, is injected in amounts of 300 c.c. There are never any toxic or intestinal disturbances. There is a rapid improvement in all the symptoms, paralleled by quantitative hematological estimates. Moreover, the cure is lasting. The manner of absorption of the blood is as yet unexplained.

Luetic Arthritis.—Dr. Singer, of Vienna, described five cases of luetic arthritis observed within three years. Four of them belonged to the tertiary stage. The processes are characteristically torpid and indolent, and marked by swelling of the capsule, thickening periostitis and hyperostoses. Even after years it does not seriously compromise joint functions. The diagnosis is made by the absence of fever and endocarditis, and expivanbilus. Gonorrheal joints often run a similar course and must be excluded. Mixed treatment is very successful.

Rectal Injections of Antistreptococcus Serum.—Sir Dyce Duckworth, of London, described a typical case of acute infectious endocarditis, with fever, chills, petechial rash and joint symptoms, which yielded to this form of treatment after every other method had proven fruitless.

Mucomembranous Colitis and Appendicitis.—Dr. F. Bernard, of Plombieres, has collected 1,100 cases of mucomembranous colitis, of which 76 or 69 per cent. presented indubitable evidence of appendicitis, while many others had probable symptoms. In 12 cases removal of the appendix was followed by cure of the colitis. Ordinarily the syndrone of appendicitis is present, but not marked, and symptom group might be characterized as "appendicism." Pathologically it is fair to assume that the mucosa of the appendix partakes of the disease present in the cecum and colon; the co-existence of enterolithiasis is also probably an etiological factor of the appendicitis.

Pseudo-uremia in Urinary Lithiasis.—Dr. Galland Gleize, of Vittel, said that he had observed cases of long standing "gravel," in which there occurred, with more or less suddenness, attacks which in many points simulated a true anemia. Examination of the urine, however, gave no support to the theory of a nephritis. The attacks were marked by a predominance of gastro-intestinal symptoms, usually lasted much longer than is customary in uremic attcks, and terminated abruptly. The termination was marked by an abundant elimination of sand and calculi. He concludes that the phenomenon is simply a form of nephritic colic of gastro-intestinal type.

Three Cases of Tuberculosis Treated with Maragliano's Serum.—Prof. Soler said that in cases in which cinnamate of soda gave results, he succeeded with the serum, which never produced any ill effects. The serum seems to be both antitoxic and stimulant.

(To be Continued.)

THE AMERICAN MEDICAL ASSOCIATION.

Fifty-fourth Annual Meeting, held at New Orleans, May 5 to 8, 1903.

(Continued from Page 905.)

SECTION ON PRACTICE OF MEDICINE.

SECOND DAY—*Continued.*

Clinical Diagnosis of Intestinal Parasite.—Dr. Charles Wardell Stiles, of Washington, D. C., discussed the features by which the presence of intestinal parasites might at least be strongly suspected and at times almost surely diagnosed. In severe cases, if some of the feces be placed upon blotting paper, there will extend around them after a couple of hours' delay a pinkish zone indicating the presence of blood in the stool. This shows the existence in the intestine of some agent causing leakage of small amounts of blood into the lumen and may be taken almost without exception to be indicative of worm parasites. If but few worms occur in the stools they may be found with greater certainty by dissolving the feces in water and allowing them to sediment. All parasites are distinctly heavier than other parts of the stools and sink before long to the bottom. This, like the centrifugation of urine, gives a larger amount of the material it is desired especially to examine in the lower layer.

Microscopical Diagnosis of Intestinal Parasites.—With the end of the little finger place a drop of water on a microscopic slide. With a match-stick take a small portion of the fecal material and rub it over this, then place the cover glass and examine carefully. Needless to say it is necessary to go over very many fields and to report the taking of material if the first examinations prove negative. It is very important that too much light should not be admitted or the eggs of the parasites particularly will not be clear, and will lose that distinctive prominence that makes them readily visible when the smaller diaphragm is used, admitting only the minimum of light necessary for working purposes. The examination should be made with the ordinary lens of one-third inch focus. Lower powers than this give wider fields and make the work of going over material more rapid, but unless the observer is very familar with the appearance of the parasite and its eggs he is apt to miss them.

Dangers of Examinations for Parasites.—There are certain dangers in the search for intestinal parasites that must not be forgotten. These are not so great, however, as in the handling of bacterial material, though the observer's unfamiliarity with the technic and the fact that, unlike bacteriological examinations, these are made on fresh material adds somewhat to the risks. With regard to both the danger and the disgust produced Dr. Stiles frankly declares that he would rather examine fecal material for parasites than sputum for tubercle bacilli. Certain of the tapeworms constitute one serious danger for the examiner. The eggs of *Tænia solium*, the pork tapeworm, may be in the stool and may be brought to the mouth by extreme carelessness. This parasite is not uncommon and produces in human beings the *Cysticercus cellulosæ* or pork bladder-worm. If the feces of dogs are being examined there is, of course, always danger of the presence of echinococcus eggs. These produce in human beings the well-known echinococcus cysts which may develop in almost any vital part of the human economy.

Appearances of Ova.—The eggs of the whip-worm are a slightly elongated oval, with an opening at both ends and a very thick shell, presenting a rather undifferentiated look inside of the visible bands of the shell. This is the most common ovum observed. The

hookworm has grown in importance in recent years. The ova are thin-shelled and the internal structure can be rather plainly seen. Usually a certain amount of segmentation has taken place in the egg. At times the embryo's outlines can be very clearly traced. The most important material to differentiate from ova are plant cells. These may occur in forms that are very deceptive. The stage of development of an egg may be of help in the diagnosis. For instance if embryos are noted in the eggs of fresh feces the parasite present is almost sure to be the Cochin China worm—the *Strongyloides*. If the embryos are noted only some twenty-four hours or more after the feces are passed then they are from the uncinaria or hookworm.

The Dwarf Tapeworm.—It is probable that the most frequent form of intestinal parasite, in the Southern States at least, will prove to be the *Tænia nana* or dwarf tapeworm. Dr. Moore, of Galveston, first called attention to it. Dr. Allen J. Smith, of Galveston, has reported some cases. Dr. Stiles now knows of five as yet unreported cases in places so distant from each other as Georgia and the District of Columbia. This small tapeworm may produce all the evil effects of its larger brethren. The main diagnostic element is the presence of eggs in the stools, since segments are passed frequently as in the larger tapeworms. This accounts for its failure of recognition heretofore, but there is no doubt that numbers of cases will now be reported from all over the country.

Appearance of Sufferers from Intestinal Parasites.—In the severe anemia of uncinariasis, or hookworm disease, there is a fish-like stare in the eye that is very characteristic. This is so notable that it is possible to go through an institution where the presence of sufferers from the disease is suspected and pick them out without more ado, if they are actually present. The appearance of the eye is not unlike that of long-continued alcoholism. It is quite different from the languid eye that accompanies the intense anemia of malaria. There is another very distinctive sign when the infection with the hookworm has occurred early in life, that is before puberty or the attainment of growth. Patients are stunted mentally and physically and the examiner is at once struck by the absence of hair on the body. No hairy growth occurs in the axillæ or on the pubes, and even though the patient may come from a family prone to be hairy, none appears on the rest of the body. This is a helpful aid in picking out cases in institutions which have so far proved the most fruitful field for the recognition of the disease.

Habitat of the Hookworm.—Dr. Stiles called special attention to the fact that sufferers from pinworm, all over the world, come from sandy districts. It is possible that this kind of soil furnishes the most suitable conditions for the development of the eggs, though it is well known that these die if they once become thoroughly dried. This kind of country may furnish opportunities for the distribution of the eggs. In Texas the cases of uncinariasis are all from the sandy districts, and it would seem that all patients suspected of having the hookworm should be asked as to the character of their home soil, as a suggestive aid to diagnosis.

Uncinariasis in the United States.—Dr. Allen J. Smith, of Galveston, said that there are records, though not very clear, of the uncinaria worm having been observed in the United States between 1840 and 1850. In 1893 Dr. Smith demonstrated the egg of the uncinaria worm, then called the *Anchylostoma duodenale*, in some feces that he had taken from a public water-closet for laboratory work for students. At that time it was thought to be the egg of the pinworm. Further specimens were obtained, always containing embryos but the sufferer from the parasite was not located. Two years ago careful investigations were made in order to decide whether the hookworm existed widely distributed in Texas. It was found in the feces of eight students, none of whom were suffering from any serious symptoms and in whom, the finding of the eggs was the first indication of anything wrong. These students came from various parts of Eastern Texas, so that it is almost certain that most of the State is affected. Dr. Smith was able to find out the nature of the soil in the various localities from whence sufferers had come and Dr. Stiles' rule of sandy regions is fully demonstrated. One of the patients was sure that his infection must have come from chewing cotton sticks, which he has long been in the habit of doing. Dr. Smith is not sure but that this may have some foundation though the material would seem too dry to harbor eggs.

Treatment of Uncinariasis.—Dr. Thomas A. Claytor, of Washington, D. C., spoke first of the prophylaxis of the hookworm disease. There is no auto-infection of patients' intestines. The eggs pass out and the embryos develop outside the body or must be carried in again through the mouth. Careful washing of hands before eating has been suggested as the only precaution needed. This is not enough, however, for the material containing eggs may get on to any part of the body and thenec be carried to the mouth, but besides that, it is not sure but that the uncinaria worms sometimes penetrate the skin and find their way through the lymphatics to their usual habitat in the intestines. The first prophylactic precaution must be the destruction of the eggs and larvæ. These die if deprived of air. The suggestion then that the feces of infected villages should be covered up by earth immediately after their passage is a good one but difficult of execution. It has also been suggested that the neighborhood of infected villages should be plowed up frequently so as to cover the worms and their eggs, causing their ultimate destruction.

The Physician's Duty.—It must be the duty of the physician to call the attention of those suffering from the disease to the necessity for the greatest care in the disposal of their feces so that they may not become sources of infection for others. All excrement should be passed into closed closets whence it cannot escape into surrounding soil. The affection in this country will occur only among the very poor, so that it will be difficult to secure the necessary prophylactic measures. Of course treatment must be begun as soon as possible and carried out effectually, so as to lessen opportunities for infection and patients must not be allowed to pass from observation when their symptoms have become less and there is an apparent cure, for the affection is most obstinate at times and relapses are not infrequent.

Treatment of Hookworm Disease.—The most effective remedy is thymol. It must be given in rather large doses; sometimes as much as 10 or 12 grams are recommended. In such large doses, however, this remedy is not without its dangers. Several cases of collapse, even with fatal result, have been reported and a number of patients have been saved only by immediate recourse to stimulation and after no little alarm. Dr. Claytor has found that 2 grams of thymol, repeated in two hours, and followed two hours later by castor oil, will prove quite as effective as the larger doses without any of the risks they involve. For a time it was thought that thymol was an absolute remedy for the disease. A number of the parasites always come away dying and dead shortly after its administration but it has been found relapses are not infrequent. It is suggested that the doses of thymol should be repeated at the end of a week and that even then the patient should be kept under observation for some time and

the thymol repeated if there is any evidence of the recurrence of symptoms from the parasite.

Danger of Alcohol and Thymol.—It was suggested that alcohol should be adminstered at the same time with or shortly after the thymol, with the idea of anticipating the liability to collapse. Thymol is meant, however, to kill the parasite and not to be absorbed into the patient's system. It is soluble in alcohol and while in solution may be absorbed with evil results. At least many clinicians claim so. There is doubt about the matter, however, and at least one good authority who uses large doses of thymol always prescribes an ounce of whisky to be taken at the same time, and so far, has had no serious results. Dr. Claytor has found by experimental work in dogs that there may be some added danger from the use of alcoholic solutions of thymol, but this is not as serious as has been imagined. Thymol fails in some cases to produce its active effect upon the parasites and then other intestinal antiseptics must be employed.

Anemia from Uncinariasis.—The anemia resulting from the presence of the parasite is very marked and persistent. This must be treated by tonics, iron, sunlight and an abundance of nutritious food. Great patience and perseverence is needed in the treatment of these cases and tendencies to diarrhea especially must be combated if the patient is to be restored to health completely.

In discussing the subject of uncinariasis, Dr. Harrison, of Alabama, said that the hookworm had been found in seven pupils of the State asylum for the blind, deaf and dumb. Of the seven cases five were blind, but in the other two the characteristic fish-like stare, spoken of by Dr. Stiles, was noted. Fever was found in these cases, usually with temperature of about 100° F., always 99.5° F. Another typical symptom of the presence of the worm is a marked condition of languor. In one institution the superintendent was asked if he had any especially lazy children—inmates who refused to exercise—to play as the others. He immediately recalled two such patients and they were found on examination, to be sufferers from uncinariasis. By simply walking through a cotton factory, in which the disease was suspected to exist, three sufferers were picked out by the characteristic stare.

Malarial Anemia and Uncinariasis.—Dr. C. A. Moore, of Alabama, said that malarial anemia had long been held responsible for a number of chronic conditions that are now found to be due to many different causes. Whole battleships of iron have been given and shiploads of quinine administered without effect. The diagnosis can almost be made on sight. There is a pulsating carotid, a systolic murmur, indicative of the intense anemia. It used to be called idiopathic anemia, whatever that may mean, but now it is coming to be known that uncinariasis is the real cause.

Dr. T. A. Williams, of Edinburgh, said that in South America these severe anemias had been considered to be malarial until the discovery of the hookworm showed the other cause at work. Before this the therapeutics of the affection had been very discouraging and the tradition of the failure of quinine in chronic cases had grown up. At Kimberley, fifteen years ago, the affection was at work and was diagnosed as a low grade malaria, or more often classed under some special name. Camp fever was a favorite appellation for the disease.

Dr. Wm. Butt Burns, of Memphis, Tenn., said that the supposed malarial cachexia is undoubtedly due in many cases to the hitherto unsuspected presence of the uncinaria worms. This discovery promises to be of greater importance in the treatment of these conditions than anything in many generations.

Penetration Through the Skin.—Dr. Stiles said that the so-called ground itch of the Southern States is undoubtedly not seldom due to the penetration of the hookworms through the skin. This ground itch affects the feet and lower legs of those who go barefoot and the uncinaria present in the soil finds opportunities to get into the organism. Ingestion by the mouth is the more usual way, though it would seem that drinking water is not often the source of the disease. Eosinophilia usually occurs in the course of the disease but its presence only arouses suspicion and is not pathognomonic. There is an increase of eosinophiles in practically every parasitic disease. In the old world the uncinaria is provided with hooks by which to fasten itself to the intestinal mucosa. The American variety of the worm, now spoken of as uncinaria Americana, has whips or flaps by which it anchors itself. The individual parasite has been known to live six years, at least it has been found in a patient that long after leaving the infected area.

Prevention of Spread.—The prophylaxis of the affection will be a difficult matter because of the number of worms that may be passed. The record number heretofore has been 1,400, but there is now an American case with 1,750, passed after thymol, and then enough were uncounted to make the actual number over 2,000. For the disinfection of quarters in which patients have been living chemical disinfectants are good but the scattering around of straw and setting it on fire is the best means of assuring the destruction of the eggs in workmen's shanties and the like. In general, fire is the ideal agent. Old clothing likely to have been infected should be burned. Sacrifices in this matter are demanded for safety's sake. The disease does not necessarily occur on sandy soil but this seems to be the most favorable for it and it luxuriates in sandy regions so that this becomes a secondary sign of the disease.

Anemia Due to Toxins.—The intense anemia which develops is not all due to the extraction of blood, nor are the nervous symptoms which are apt to develop rather early in the case or at least before marked blood poverty could be expected to have caused disturbance of nerve nutrition. There is evidently then, a toxemia associated with the presence of the worm. Just what the character of the toxin is remains a subject for investigation of the greatest interest. The anemia needs to be treated directly by iron, but after the removal of the parasite the patient must be put under as good conditions as possible with an abundance of light, air and nutritious food.

Uncinaria and Drinking Water.—Dr. Allen J. Smith, of Galveston, said that all of the cases of uncinariasis under his observation had been of very mild character. He feels sure that the parasites do sometimes penetrate the skin though not often nor necessarily. Drinking water cisterns may, under certain circumstances, furnish ideal breeding places for the parasites, especially when charcoal is used for the purification of the water. The charcoal furnishes a supply of oxygen to the worms which drop to the bottom of the tanks. As the custom of obtaining drinking water in this way is very common in the Gulf States it will undoubtedly serve to aid in the distribution of the parasite. Dr. Smith pointed out that typhoid fever bacilli might find their way into such cisterns by being blown as dust on to roofs and thence washed by rain into the tanks. In one case an epidemic of the disease affecting mainly the south side of the streets of Galveston, at a season when the prevailing winds were southeasterly, seemed to be explainable no other way.

Dr. Clayter, in closing the discussion said that in his case despite the repeated use of thymol for two months, the patient was not yet free from the parasite, that the

high hopes raised of that remedy as a specific for uncinariasis did not apply to all cases of the affection,

Tropical Dysentery.—Dr. Charles F. Mason, major surgeon in the United States Army, stationed at Fort Sam. Houston, Texas, detailed the result of his experiences with tropical dysentery. This affection had been attributed to many causes until Shiga's discovery of the bacillus and Flexner's demonstrations settled its etiology. The recent connection of the bacillus with the summer diarrhea of infants makes the disease even more important than before, though it was known to occur in epidemic and sporadic form in this country. The conveyance of the disease is not by contagion, through the air, but as for most enteric diseases by actual swallowing of the germs that have been discharged in the stools of a previous patient. Milk may become infected or uncooked foods may be the material of contagion. It may become dry and be blown about as dust or may be carried by flies or other insects.

Incubation Period.—This does not last long, as a rule not more than five or six days at the outside. In one case where a large culture of the organism was swallowed intentionally the dysentery set in within twenty-four hours. In a second case in which a small quantity of the culture was swallowed accidentally the incubation period was forty-eight hours. The first symptoms are usually sudden. The patient may be taken during the night, after having gone to bed perfectly well. There is also a sudden rise of temperature, though sometimes the temperature is subnormal during the whole course of the affection. These latter cases are of worse prognosis as a rule. The more the symptoms of involvement of the intestines that is the more tenderness, pain and tympanites complained of, the worse the prognosis as a general rule. Intense localizations of the affection cause more absorption of toxic materials and breakdown the resistive vitality of the patient and his reactive powers.

Prophylaxis and Treatment.—The usual death rate is about 30 per cent. The greatest cleanliness of the hands, the clothes and of all instruments and utensils must be exercised to prevent the spread of the disease. The serum treatment of the disease has given very encouraging results. In severe cases it is not always successful but the mortality of cases treated with the serum is only one-third that of cases treated without it. The mortality under serum is less than one-half that of the best minimum mortality before serum was introduced. As accessory remedies ipecac and salines are of service and their use should not be neglected, even when serum is employed, since by clearing out the intestine they aid in preventing the absorption of further toxic material.

Infantile Summer Diarrheas.—Dr. J. Mason Knox, of Baltimore, Md., said that the *Bacillus dysenteriæ*, discovered by Shiga, and studied so successfully by Flexner, was present in the severe summer diarrheas of children in this country. This discovery promises to be one of the most life-saving advances in medicine in recent years. The serum of the blood of little sufferers has been demonstrated capable of causing the agglutination of the organisms of dysentery brought from Japan, while the serum of horses, obtaineed by injecting Shiga's bacillus also agglutinated the micro-organisms isolated from the intestinal contents of the American children. There seem no room for doubt left that the summer diarrheas of children are due to this bacillus which causes epidemic tropical dysentery but has been known to cause sporadic or even groups of cases of dysentery here and there in this country.

Predisposing Factors.—The disease is much more apt to develop toward the end of the summer when little patients have been worn out with the heat and with the milder intestinal affections so common at this season because of the luxuriance with which microbic life grows in all food material. This lowering of resistive vitality is important for the disease is noted also to occur frequently in anemic, rickety children, whose vital resistance is at a low ebb. The state of the patient can be better decided by the sphygmomanometer than by the most expert finger since blood-pressure is the most important element in the prognosis. Undoubtedly the use of Flexner's serum will reduce the mortality from the disease, though so far there has been no test experience with it. When it was ready for use last summer the cases under treatment were not of the acute type but chronic in character with symptoms dependent quite as much on their general run down condition as on the infection present.

Method of Infection.—Now that the exact nature of the foe which causes such great mortality has been recognized it remains only to prevent the disease. The portal of entry of infection is by the mouth. Contaminated milk or water is the usual source. Unboiled water was found to have been given to most of the little patients. Store milk is especially suspect as a causative agent. Breast-fed infants acquire the disease from unboiled water. Sporadic cases of the disease carry the infection over the winter. Four such cases have been under observation this winter at Johns Hopkins. For months the bacillus may be harbored in the intestine in chronic cases, so that when a child has had the disease precautions must be taken as after typhoid fever convalescence, not to allow the patient to become a source of infection for others. The coming summer will undoubtedly prove most interesting and all practitioners should take the opportunity to have the stools of suspected cases examined by their local boards of health, if possible.

Malarial Dysentery.—Dr. Wm. Brett Burns, of Memphis, Tenn., said that there occurs a dysenteric condition often recognized and described in malarial patients in which no other causative agent can be found except the malarial parasite itself. In these cases the malarial parasite has been found in the vessels of the intestinal walls and pigmentary deposits due to the presence of large numbers of the parasites are also found. It would seem that the malarial organism is responsible for a special form of dysentery.

Pathology of Amebic Dysentery.—Dr. H. F. Harris, of Atlanta, Ga., said that the ulcers of amebic dysentery always present undermined edges with fistulous tracts connecting with each other at times. The zone of hyperemia around the ulcer shows that toxic products of the amebæ invade the tissues and evidently are the cause of some of the symptoms. Amebæ may be found in the blood-vessels without clotting having occurred so that it is not unlikely that the parasites are carried to the liver in the portal blood in the cases in which hepatic abscess occurs. These abscesses may occur in any part of the liver. The constitutional symptoms are often a prominent feature of the disease and the disease may have a history extending over six to seven years.

Clinical Symptoms.—Patients may have as many as 50 stools in twenty-four hours for some time, yet recover from the disease. Great fluctuations are likely to occur. Alcoholics suffer most severely from the disease and the prognosis in them is always more dubious. The presence of large quantities of mucus in dysenteric stools is almost pathognomonic of amebic causation. The diagnosis can be made practically without the microscope in many of these cases. It must not be forgotten, however, that the amount of mucus becomes less in severe forms of the disease when the patient is very much run down. This may prove very de-

ceptive in the terminal stage of the disease. When liver abscess forms there is seldom any warning of the fact until the lesion has progressed to a considerable extent. Local swelling and tenderness may be noted. The absence is usually massive and miliary abscesses are very infrequent in amebic dysentery. Perforation of the intestines may occur, but as there has been a slow chronic inflammatory process before the consequent peritonitis may be thoroughly walled in and cause only localized abscess.

Amebic Dysentery at Johns Hopkins.—Dr. T. B. Futcher, of Baltimore, gave the details of 119 cases of amebic dysentery as they occurred at Johns Hopkins in the last fourteen years, 117 of the patients were admitted to the medical wards among 15,000 patients. The disease is not tropical, though heretofore considered to be. Sporadic cases occur in many parts of the country. Prof. Dock reported some from Michigan last year and observers in New York have shown that the disease is apparently, to a certain extent at least, endemic in this country. The infection is evidently by way of the mouth and this emphasizes the necessity for care in the handling of such cases and the need of directing patients very specially so as not to spread the infection. Nearly one-fourth of the patients at Johns Hopkins developed hepatic abscess. This may become pulmonary after penetrating the diaphragm or may, as in one of the cases, invade the right kidney. Eight of the liver abscesses penetrated into the lung and the pus was expectorated.

Treatment of Acute Dysentery.—Dr. James M. Anders, of Philadelphia, said that the best remedy in the treatment of acute dysentery is ipecacuanha in large doses (15 to 20 grains). Many patients will not retain this, but if they are made to keep perfectly still, not being allowed even to swallow the mucus, being wiped from their mouths by the nurse, they will often be able to keep the ipecac down until it has its effect of producing large cholagogic stools. Where large doses cannot be retained small doses of ipecac, one-fourth grain, repeated till a like effect is obtained, gives excellent results. In children this form of medication always gives better satisfaction than the massive doses. Other remedies that are efficient are sublimed sulphur, 20 grains with 5 grains of Dover's powder every four hours until large evacuations are obtained. This is good especially in the non-Shiga bacillus cases. The resultant production of H_2S seems to inhibit the growth of microorganisms in the intestines, and causing the dysentery sulphur has some inhibitory influence even over amebæ, and should be used in conjunction with other remedies for the treatment of that disease.

Local Treatment.—High irrigations are, in Dr. Ander's experience, good in chronic cases but when the symptoms are acute. In amebic dysentery high injections are almost a necessary part of the treatment. Warm quinine solutions, 1-5,000, or salicylic acid 1 to 2 per cent. or mercury bichloride solution 1 to 6,000 are effective. In chronic cases Dr. Anders alternates with a high injection of an antiseptic in the morning and an astringent at night. The pressure of the injection should not be more than 2 to 3 feet, as high pressures do harm and may even cause rupture through the dangerously thinned base of a dysenteric ulcer. The patient should be in the left lateral or dorsal decubitus with the hips elevated.

Amebic Dysentery Endemic.—Dr. Alexander Lambert, of New York, said that he has had under observation a case of amebic dysentery, the sufferer from which had not been away from New York for over five years. Amebic dysenteries do not develop liver abscesses at the North, at least not while in the hospitals. In chronic cases alternate weeks of treatment with 1-5,000 quinine and 1-5,000 nitrate of silver seem to give the best results. Salol and castor oil give the best results by the mouth. There must always be doubt about the cure of cases of amebic dysentery. Relapses are very common. Patients seem to suffer more with cramps in the legs at night in amebic dysentery than in other forms of dysentery.

Dysenteric Remedies.—Dr. I. L. Van Zant, of Fort Worth, Tex., said that when the discharges of dysenteric patients were brown bismuth in large doses did good; when they were green, however, it was not of benefit. Since the seat of dysentery is in the intestinal canal it seems better to reach it through the mouth or the rectum than through the circulation by means of a serum. Hyposulphite of soda makes the green stools yellow and usually relieves many of the patient's symptoms. Given with pepsin this is the best remedy for ordinary dysentery with greenish tinge of stools.

Dr. Moore, of Galveston, said that for four years he had studied the dysentery that occurs so frequently in malarial patients but he has not yet quite made up his mind as to whether the affection is a specific malarial effect or not. It occurs in nearly all old malarias but in most of them some other cause than the plasmodium can be found. Amebic dysentery is often cured by quinine but in some cases gets well of its own accord. Cramps are very severe in amebic dysentery when the affection is acute; when there are many amebæ present and these contain red blood corpuscles. Recently Dr. Moore has found that the fluid extract of *Chaparra Armagosa*, a Mexican and West Texan shrub, is an excellent remedy for obstinate cases of dysentery of many types.

Dysentery in Children.—Dr. Knox said that the stools of children who suffer this summer from severe diarrheic conditions should be examined bacteriologically. Colonies that develop after twenty-four hours yet produce no gas are almost sure to be due to the Shiga bacillus, though it must be further tested for agglutination to be absolutely sure.

Dr. Harris said that quinine acting on amebæ in a test tube for twenty-four hours fails to kill them, so that he has lost his faith in it as a remedy. He uses instead dilute injections of H_2O_2 with excellent results. Usually a single injection is sufficient to effect a cure in a mild case. If patients return to mixed diet too soon and bring on a relapse then the hydrogen peroxide fails to give relief a second time.

Dr. Futcher said that at Johns Hopkins high irrigations of quinine 1-3,000 gradually up to 1-500 was the best remedy for amebic dysentery. Success depends on the method. The injection must be made slowly and the patient should be rolled over so that the solution will reach all parts of the bowel.

Dr. Anders said that rest is an important element in the treatment of dysentery. For the success of the ipecac treatment especially absolute rest is necessary. In acute dysentery injections are not advisable as a rule, in chronic dysentery solutions of silver are the best remedy.

THIRD DAY—MAY 7TH.

The Sources and Manner of Typhoid Infection.—Dr. W. H. Welch, of Baltimore, said that there is now no doubt that typhoid fever always comes from a preceding case of the disease. There is no longer any question of the origin *de novo* of the infection. If only sufficient care and time be devoted to the investigation every new case can be traced to a preceding case of the disease. The infection always occurs through the mouth by the ingestion of infectious material. The theory of respiratory infection as one mode of propaga-

tion of the disease long believed in is now definitely abandoned. Infection comes from the feces and urine of typhoid patients. This latter is a source of infection whose importance has only come to be realized in recent years. The infectiveness of both urine and stools, especially that of urine, may continue long after convalescence. This constitutes the important fact in the prophylaxis of typhoid fever. Directions must be given to patients and their enforcement insisted on so that infectious material will not be distributed in such a way as to cause the development of further cases of the disease. This is a difficult problem, but with our present knowledge of the disease by no means impossible, and even not very difficult if a united and determined effort is made.

Prophylaxis of Typhoid Fever.—Dr. John S. Fulton, of Baltimore, said that the most discouraging feature in the warfare with typhoid is the number of cases of the disease that escape diagnoses. During the Spanish-American war nearly one-half of the cases of typhoid fever that developed among the soldiers were diagnosed as something else. The army medical men represented at that time, not unreasonably, the profession of the country. With this fact before them it is not hard for medical men to understand the continued prevalence of typhoid fever. One of the sources of error is the acceptance of the opinion that malaria is responsible for most of the continued fevers in our warm regions. One army physician with a foreign accent and no prejudices in this matter made no such mistakes, reported all his cases typhoid and was correct. Perhaps it is not too much to say that two-thirds of the malaria, so-called, in this country, is typhoid. Osler's expression should be borne in mind. "After six to seven days of treatment with quinine when malaria is suspected, if there are no definite results then the fever should be considered to be typhoid, until some better diagnosis is made."

Missed Diagnoses of Typhoid.—These are most frequent at the extremes of life. Typhoid fever does not often occur after fifty years of age, but the mere fact of age is not enough to exclude the disease. In very early years, however, typhoid is by no means so infrequent as has been thought. It may occur under two years of age and in cities like Philadelphia where the chances for infection are frequent may rage among children with quite as much virulence as among the adult population. All sorts of queer names are adopted as a mask. Camp fever during the war. Some one has suggested New York fever for the continued fever of children that occurs in New York, but is according to one pediatrist not typhoid. Ithaca fever would be a good name for some cases of the disease, only under present circumstances it would be uncomfortably reminiscent.

(To be Continued.)

SECTION ON SURGERY AND ANATOMY.

(Continued from Page 907.)

THIRD DAY—MAY 7TH.

Sunshine and Fresh Air in the Treatment of Tuberculosis of Bones and Joints.—Dr. De Forest Willard, of Philadelphia, said that all these new agents which had sprung into prominence within the last few years could as yet be regarded only in the light of therapeutic assistance to the classic treatment of tuberculosis by rest and extension. He believed that all hospitals should be fitted with commodious solaria where the patients should be exposed in a condition of virtual nudity to the direct rays of the sun. It might be well to cover the affected parts with blue glass so as better to permit the passage of the actinic rays. Inasmuch as air was as necessary as light, open air life was as much indicated for these patients with tuberculosis of the hard parts as for those whose soft tissues were involved. He concluded that the actinic and the X-rays were at best only supplemental assistants to the mecanichal and general therapeutic measures usually employed.

Congenital Dislocation of the Radius.—Dr. Charles A. Powers, of Denver, said that the patient who was the subject of the communication was a boy of thirteen years in whom the left upper extremity had been from birth materially shorter than its fellow, the bones of the forearm being fixed in extreme pronation with inability to supinate. The elongated left radius was dislocated upward, forward and outward, lying on the outer and anterior aspect of the humerus. Photographs and X-ray pictures showed the condition. The author was able to gather but few similar cases from literature, and of these but two authentic instances had been subjected to operation. The first was by Langenbeck who in 1865 resected the entire elbow, the child dying some weeks after operation. The other case was operated upon by Bonnenberg, who resected 3 cm. of the upper end of the radius, subsequently doing a linear osteotomy at the lower end of the bone. The result showed but moderate improvement. Early amniotic compression seems to be the most probable theory regarding the causation of these deformities.

Epithelioma Under the X-ray.—In Preliminary Report of the Histological Changes.—Dr. J. C. Stewart, of Minneapolis, cited his findings in the case of a pronounced epithelioma of the back of the hand from which many specimens had been taken. He had them in the pathological exhibit. They showed some very interesting changes which accompanied the melting away of the growth. First and most marked was an extensive and progressive fatty degeneration which occurred in the nuclei and in the periphery of the cells in the neighborhood of the pearls. It is well known that these growths have very poor blood supply but as the fatty change progresses vascularization of parts begins to develop. At first these vessels are filled with red blood cells. Later their place is entirely taken by polymorphonuclear leucocytes. The necrotic changes associated with hyaline degeneration are progressive. Just before liquefaction occurs there is seen to develop a fine reticulum which fills with leucocytes. Clinically he observed that while the parts of the tumor which were subjected directly to the rays disappeared those portions which were covered with skin escaped and grew with alarming speed. This necessitated a radical operation.

Dr. H. A. Christian, of Boston, in opening the discussion cast some doubt upon the correctness of the interpretation of the pathological findings. He said that many substances besides fat stain with osmic acid, and he believed that the vessels seen marked the formation of granulation tissue rather than that they were created with a view to promoting phagocytosis.

Dr. Nichols, of Boston, said that the general trend now was to look with great caution upon the use of the X-rays because it had been shown that not only were they inefficient as curative agents in malignant cases but they were known actually to have produced genuine epitheliomata.

Dr. John Ridlon, of Chicago, looked with little faith on the future of any kind of rays as aids in the therapy of joint and bone tuberculosis.

Dr. F. B. Lund, of Boston, believed that the X-ray and the other forms of vibratory treatment were of no greater value in the treatment of malignant growths than so much old fashioned paste. They probably had

done more harm than good in creating the false impression that they were curative and it was time to take up the knife again and cut these growths away freely and then to think of using the rays.

Varix of the Inferior Mesenteric Vein Complicated by Chronic Ulcerative Colitis.—Dr. John E. Summers, Jr., of Omaha, described a very pronounced case of chronic ulceration in which he had been fortunate in discovering, while endeavoring to operate for left inguinal colostomy, a prodigious varix of the vein and all its branches. Supposing that its etiology might lie in some malformation or growth in the posterior portion of the stomach or pancreas, he operated, and found nothing except slight drooping of the stomach. Thinking that this might possibly be a factor, he relieved it and incidentally did a Morrison operation as well, with a view to relieving portal circulation. This form of treatment did some good but it finally became necessary to do right inguinal colostomy and wash patient out. He gained twenty pounds in weight. The author desired to know if anybody could tell him whether the varix was due to pressure or to infection from the chronic ulceration.

Acute Epiphysitis of the Head of the Femur.—Dr. John P. Lord, of Omaha, said that the condition though rare was by no means infrequent and might under certain conditions be mistaken for a congenital dislocation in which there remained only a small knob where the head of the bone should be or for coxitis in which there had been pronounced absorption of the part. The history and duration of the case, the presence or absence of scars and the X-ray would easily prevent any such errors.

Dr. Ridlon, of Chicago, and Dr. Townsend, of New York, each advised a pulling down of the part which should be crowded into the acetabulum and fixed for years in abduction.

Necessity for More Care in the Treatment of Skull Fractures.—Dr. W. H. Earles, of Milwaukee, said that the general practitioner who frequently was called upon to treat these cases should be trained to a proper appreciation of their danger. He believed that the most important part of the treatment aside from the technic of removal of depressed bone and other products was the keeping of a thoroughly wet dressing on the part so that the cerebral spinal fluid might drain out freely, thus carrying with it whatever sepsis might have crept or been driven in. The moisture prevents the formation of scabs.

Epispadias.—Dr. J. B. Bullitt, of Louisville, reporting a case treated by a modification of Cantwell's operation, said that because of its ease of application and of the certainty of its results it was too bad that so valuable a contribution to the surgery of these parts should be neglected by the text-books. It consists simply in a free dissection of the misplaced urethra, in a separation of the corpora cavernosa and in a placing of the urethra in its normal position. He cited a case which had been almost entirely relieved in ten days of very distressing symptoms by this operation.

Dr. Parham, of New Orleans, in opening the discussion, said that Cantwell's operation had been successfully employed and somewhat modified in his city. If attention were given to carrying out the technic with care very perfect results might be had from it.

Dr. Fenner, of New Orleans, had noted with great surprise the ease with which the corpora cavernosa could be separated. He advised waiting until the tenth year and insisted that perineal drainage was indispensable to success.

Dr. Bullitt, in closing, said that the only difficult parts of the operation were in dissecting the mucous membrane from the glands; in separating the cavernous bodies far enough upward and in dealing with the urethra just at the point of abnormality.

Cicatricial Anchylosis of the Jaws.—Dr. Rudolph Matas, of New Orleans, said that while such conditions did not involve life they had a physiological as well as cosmetic standpoint. In a profoundly interesting case which came to him at the advanced age of twenty-seven years, he found himself face to face with the following apparently hopeless conditions; in infancy the man had suffered from continuous mercurial stomatitis which had gone on to the formation of cicatricial osseous anchylosis asosciated with micrognathism, or rudimentary development of the lower jaw and with vicious eruption of the permanent teeth of both jaws on a horizontal plane. He proceeded to the correction of the deformity by completely dividing the cicatricial tissues from the commisures of the mouth to the anterior border of the ramus of the jaw with suture of the skin to the gums, followed, after healing, by inversion of skin-flaps from the cheek into the mouth. As only partial relief was obtained, another plastic operation was performed in which a long pedunculated skin-flap was transplanted from the neck into the mouth to replace the lost mucosa. The functional recovery was good.

Further Contribution to the Surgery of Undescended Testicle.—Dr. Arthur D. Bevan, of Chicago, said that this condition was far more common than is usually supposed. Recent experimental work had convinced him that the testicle could live and develop without the assistance of the spermatic vessels. It was very fortunate that this was so because these structures were the agents which caused tension when efforts were made to take testicles from the body and place them in the scrotum. He wished to contribute this detail to the technic of his operation for the relief of sryptorchidism and felt sure that operators would have no difficulty in keeping the testicle within the scrotum without sewing it if they simply cut the spermatic vessels.

Dr. Rodman, of Philadelphia, said that he felt very grateful to Dr. Bevan for this important addition to his valuable technic because he thought it would be a means of preserving to many, if the operation were done at about the sixth year, not alone the developmental but the reproductive functions of the gland as well.

Surgery of the Urinary Tract in the Female.—Dr. J. B. Murphy, of Chicago, said that it was of great importance to know that we possessed four times the necessary amount of renal epithelium to keep us healthy. There is a very remarkable interrelationship between the two organs when a portion of one is cut away the other grows. When one becomes sarcomatous the other is sure to follow suit. In abscess of the parenchyma it is as wise and as necessary to treat this by free incision as anywhere else in the body. In these cases the capsule should be freely stripped to further relieve the tension. Hydro and pyonephrosis, the latter a sequel of the former, are merely symptoms of pathological conditions lower down. These are conveniently divided into three areas, namely the upper fifth of the ureter, the middle three fifths and its vesicular attachment. Cysts of the kidney it should be remembered are lined with epithelium. He advised free incision of the pelvis and stated that if properly sutured it would heal kindly.

Dr. Matas, in discussing this paper, said that in the surgery of the intestines the arteries and the kidneys Dr. Murphy had accomplished a wonderful amount. He himself believed in the great value of retrograde drainage which consisted in passing a catheter through the hole in the back, down the ureter to the outside.

Dr. Tinker, of Baltimore, said that Americans should be proud that their surgeons had removed the first kidney, the first stone and the first capsule.

Dr. Murphy, in closing, said that in the future he will remove both vesicular papillomata and calculi lodged in the wall of the bladder through an anterior colpotomy. He defended conservatism in the treatment of the kidney on the ground that about 40 per cent. of primary nephrectomies die, whereas if drained and subsequently removed the mortality is only 17 per cent.

Tuberculosis of the Mammary Gland.—Dr. A. H. Levings, of Milwaukee, said that the condition was commonly supposed to be a very rare one but that in all probability, if the facts were known, a good many breasts which are removed for supposed carcinoma are in reality tuberculous. They occur more frequently in women from the twenty-fifth to the thirtieth year and although usually secondary to a focus elsewhere they may be primary and are often retrograde, namely, against the lymph current. The gland is nodular but not usually much enlarged; the nipple being often so much retracted as to closely simulate carcinoma. He concluded that great care should be shown by every one prior to doing any operation upon the breast to make sure that the condition was not one of simple tuberculosis.

FOURTH DAY—MAY 8TH.

Clinical Reports of Fractures of the Upper Third of the Femur.—Dr. L. Sexton, of New Orleans, said that the use of plaster of Paris, particularly in children and in warm Southern climates, was very desirable. He said that a great mistake had been made in the past in not applying the plaster freely enough to the upper fragment, altogether too much attention having been given to the distal fragment. It was of no use, he said, to place a heavy cast upon the leg without carrying it well up toward the arm pits. He believed that for ease of application, for adaptability and for excellence of result, the plaster was better than any other dressing. He recommended very highly the application of the plaster to the part so soon as diagnosis might be established.

Dr. Grant, of Denver, said that he would hesitate to apply plaster immediately because of the danger from subsequent swelling.

Dr. Brandon, of Tennessee, advocated a simple and practical splint for children which was made on somewhat the principle of the three-angle chair, which gives such excellent results in certain types of adult cases.

Dr. J. W. Draper Maury, of New York, reported having made some experiments with the use of dextrine as an adjuvant to the ordinary plaster of Paris. It was useful and seemed for some reasons more practical than the so-called "glass" dressing to which the previous speakers had alluded. It was the material which decorators used in their mural work, and although he had recently found that Velpeau had spoken of its use very favorably, of late years it seemed to have fallen into disuse. A convenient and practical way of utilizing this material was to add ten per cent. of it by volume to the plaster of Paris, which, after thorough mixing, was incorporated as usual in the crinoline. Clinical experience showed that such dressings would dry very much too slowly for practical use unless heated. A convenient means of accomplishing this was by the use of an ordinary painter's gasoline lamp, which made an intense heat but which was perfectly safe to use on a patient who was conscious. For spondylitis jackets and for ambulatory casts for lesions of the lower extremities this dressing was exceedingly useful. The primary cast should be made in the ordinary way and then dried with a torch, then apply the dextrine bandages, about one or two thicknesses of crinoline being sufficient. The porosity of such a cast is diminished, but not so much so as to interfere with the patient's comfort at all. Plaster jackets made in this way and used with care can be counted upon to last upward of a year, and because of their almost adamantine hardness fenestræ can be cut of liberal size and at frequent intervals.

The Closure of Wounds.—Dr. Miles W. Porter, of Indiana, said that the present methods of wound closure were by no means satisfactory; that he had worked for a long time in the hope of perfecting the use of adhesive strips in place of sutures and he presented a long series of cases which seemed to show very satisfactorily that he had achieved his goal. He said there were three things much to be desired in coaptation, *viz.*, sufficient drainage, adequate junction of homologous parts and absence of traumatism. Largely because of the compatability of perfect drainage with perfect coaptation in using adhesive plaster strips, very excellent results can be obtained by this method if they are properly applied. One of the most important points in the technic should be to adjust a good-sized and hard-rolled mass of gauze along the outer margins of the wound. When the plaster passed over them, these should be instrumental in obliterating dead spaces. His results had been eminently satisfactory even in the closure of long abdominal wounds. He specified particularly, however, that the technic was not applicable in the presence of infection or of much tension.

Dr. Morton, of California, in discussing this paper, said that it was the abdominal fasciæ which held the viseral contents in place. He could not understand how any number of strips, no matter what might be their mode of application nor how many rolls of gauze might be applied, could coapt these very important structures. It seemed to him that the limits of the technic were reached when it was employed as it might well be, in the dressing of extremity wounds, particularly those following amputation.

Operative Treatment of Exophthalmic Goiter.—Dr. T. C. Witherspoon, of St. Louis, reported nine cases, and from them drew the following important deductions: Jonnesco's operation, which consisted in the removal of the upper and middle cervical sympathetic ganglia, he had used in his first case but partly because of its unsatisfactory outcome, partly on account of the unpromising reports from others, the remaining eight cases had been subjected to the older operation of thyroidal hemisection. Unfortunately we knew so little of the pathology of this condition that it was most difficult not only to answer the question "When shall we operate?" but "How shall we operate?" Histories of all the cases of Graves' disease which have been treated medically were unanimous in showing that the disorder under medical treatment was characterized by a gradual, progressively fatal termination. Medicine, it was true, could do something to prolong the life of the patient, and there were times when these cases seemed to be improving, but they invariably retrograded. Thus it seemed that in all probability it was truly a surgical condition. He detailed the technic as follows: He would make almost without exception an anterior incision along the sternomastoid rather than the transverse incision recommended by Kocher. He then splits the capsule and the deep fascia of the neck, lifting the tumor forward and entering the space between it and its capsule from behind. In this way he avoids the recurrent laryngeal nerve and is able more efficiently and speedily to secure the interior thyroid arteries. There was very little difficulty, he said, in grasping the superior vessel, but the ligation of the inferior was often a matter of difficulty. In his experi-

ence the isthmus, so often spoken of as carrying a dangerous blood supply, had given very little trouble.

Dr. Grant, of Denver, agreed with the speaker that the capsules should always be opened as a preliminary to tying off blood supplies, because fatal hemorrhage in these cases was not necessarily extensive, particularly if the hemoglobin was diminished and the heart action more than usually impaired, he found it very desirable to build these patients up by absolute rest in bed and by the exhibition of strychnine for at least a week prior to operating upon them.

Dr. Rixford, of California, said that these cases presented very grave problems because, as had already been stated, so little is known of their pathology. At the present moment, however, there is recognized what seems to be two separate etiological factors. One class of cases is due to some functional derangement of the thyroid glands, the other to an unbalancing of the sympathetic system. One might later on be able to distinguish the two conditions apart. At present this could not be done, but they are treated without due regard to their etiologies. Naturally those cases due to sympathetic degeneration, if such existed, would respond to Jonnesco's operation, whereas those in which the gland primarily was effected would be uninfluenced by it and must be treated by its hemisection. He had found these cases most dangerous to operate upon because of their extremely low vitality, of the readiness of absorption of antiseptics through their skins and of their extraordinary susceptibility to sepsis. He specially urged the importance of opening the capsule and of working from behind forward, to recognize and to avoid the recurrent laryngeal nerve.

Dr. Horsely, of Texas, said that no one had as yet differentiated the two types, because of the lack of pathological information on the subject. He had done a Jonnesco operation with immediate improvement. This, however, was not lasting and had recently gone on to a fatal termination. A study of the literature had convinced him that there was a possibility of our having become over sanguine in the matter just as we had over trepining for epilepsy, the improvement in these cases being a temporary one due only to the shock of a very severe operation.

Dr. Rixford, in closing, said that the certain indication for operation in these cases was failure of internal medicine to limit the disease. Inasmuch as all cases suffered somewhat from the administration of general anesthesia and since it was fatal to some, he recommended most strongly the use of local anesthetics.

Subcutaneous Injection of Paraffin for Deformities of the Nose.—Dr. G. F. Connell, of Colorado, said that certain objections had been raised on this technic, prominent among which were toxic absorption, pressure necrosis, which might result from too much heat or tension; the failure to correct the deformity by the use of too little or too much paraffin; air and paraffin embolism. He reported a number of cases in which none of these difficulties had presented themselves and from which he deduced the following conclusions: The preparation of the patient for this minor operation should be as carefully done as for major work; the anesthetic which he had employed was one per cent. eucaine. It seemed to him desirable to have a screw attached to the piston of the injecting syringe by which the paraffin might be fed in with greater accuracy than otherwise. He accredited Dr. J. Leonard Corning, of New York, with having been the first to prove that the injection of non-absorbable oils was harmless. He believed the method was still in an experimental stage, but that the use of paraffin would become much wider as its main advantages became known. He thought it desirable to inject too little rather than too much into a given area because more might be added later.

Dr. Morton, of California, advised the introduction of paraffin at about 109° F. He had found sperm oil a very useful medium with which to hold a glass syringe at this even temperature. He disagreed with the writer who had limited the amount to be introduced by purely empiric grounds, stating that the only condition which should limit the quantity of paraffin one might safely introduce was the tension. He showed a beautiful series of sections which had been removed from the nose of a patient at intervals of one month. These sections showed that the paraffin was gradually absorbed, its place being taken by connective tissue. In other words he deduced that the paraffin played the part of a clot of blood extravasated in the tissues and subsequently underwent organization. There could be no doubt in the minds of those who saw his beautiful microphotographs that this process really did take place.

Dr. W. J. Mayo, of Minnesota, said that in order to avoid dangerous tension which could always be recognized by the whitening of the tissues, it was often desirable to cut them subcutaneously with a cataract knife, or to stretch them, as had been suggested by MacDonald, by the introduction of hot salt solution under great tension, which injection might, if necessary, be repeated several times before the paraffin was introduced.

Abscess of the Spleen.—Dr. W. M. Spear, of Rockland, Maine, cited a case which he had successfully diagnosed and treated. The condition literature showed not to be infrequent; an autopsy would undoubtedly prove the presence of many cases now incorrectly diagnosed as perishing from sepsis. They usually give a history of some infectious disease, particularly of typhoid or malaria. They were characterized by the presence of profound anemia and of pain. He said that on account of the hemorrhagic character of the spleen, removal of the organ rather than drainage, seemed to be necessitated.

The Choice of Anesthetics.—Dr. E. J. Mellish, of Texas, said that the exclusive use of any one anesthetic was never justifiable. This, however, presupposed the presence in the operating room of a specially trained anesthetist who was capable of making such choice. Anemia of a degree below 50 per cent. of whatever cause was undoubtedly one of the most important indications and guides in this matter. Inasmuch as ether was a respiratory rather than a cardiac depressant, it was indicated in all the anemias rather than chloroform, which was known to destroy a certain number of red cells as well as to be a marked cardiac depressant. Gas, however, or gas and oxygen was the ideal anesthetic, but in order to use it for prolonged operations, it required the services of an experienced anesthetist. Ethyl bromide and chloride were likewise useful for certain operations, but because of the fleeting character of the anesthesia they could be used only for minor work. As regards vomiting, he said that compression of the phrenic would often inhibit this during the operation and that since ether was disposed of by the patient largely through the mucous membrane of the stomach, water, which is an excellent solvent of the gas, should be given very freely up to the time of operation and immediately after it. The stomach should be washed out unless the patient could drink freely without increasing the nausea. Free rectal irrigation with salt solution almost always stopped the vomiting in a reasonable time. He concluded by saying that ether was dangerous in arterial sclerosis; chloroform in anemia and myocarditis.

Dr. Moore, of Minnesota, took exception to the author's statement that one anesthetic should not be used to the exclusion of all others, since for the past twenty years he had employed chloroform in 95 per cent. of his cases. In all that time he had had no deaths. He contended that it was not the drug which was dangerous, but the unskilful anesthetist.

Dr. Tinker, of Baltimore, said that it seemed to him enough space had not been given to local anesthesia, its adaptability and extraordinary safety. For its successful employment he deemed three points necessary, *viz.*, that the patient should desire the operation to be done by this method; that the utmost care should be employed in the administration of the infiltration and that no one should attempt it who did not possess an intimate knowledge of the position of the main nerve trunks which should be injected with one per cent. cocaine. The third point which he emphasized consisted in the use of morphine, one-sixth of a grain being advised one hour before operation, one-sixth at the beginning and one-sixth during its completion. It was of importance that the anesthetist should be a man whose personality was such as to divert the patient's attention.

Dr. Ochsner, of Chicago, said that a very important point in the treatment of patients suffering from chloroform poisoning consisted in violently compressing the chest a number of times before raising the arms to begin artificial respiration. This, he said, was usually the first thing on the program and by its employment all the collection of chloroform contained in the bronchi and trachea was driven out into the pulmonary lobules and at once taken up by the circulation. It was evident, therefore, that the first thing accomplished by the usual technic was to give the patient, already poisoned by the drug, an additional dose of it.

SECTION ON OBSTETRICS AND DISEASES OF WOMEN.

(Continued from Page 910.)

THIRD DAY—MAY 7TH.

Sarcomatous Degeneration of Myomata.—Dr. T. S. Cullen, of Baltimore, said sarcomata might develop into a submucus, intermurial and subperitoneal myomata contrary to the accepted idea. These tumors may be derived from both the connective tissue and the muscle fibers. Two varieties are met with which could come from the muscle, viz., the spindle and the round celled. Some cases were so obscure in their structure that it was practically impossible to trace the development of the myoma from any particular one of these tissues. One might recognize these cases clinically but not in many instances, for operators had so long been accustomed to regard these tumors as benign that the proper examination of them was often not made microscopically, and the diagnosis rested on the macroscopic appearance alone. These tumors would grow very rapidly in the presence of fibroids and often after operation not two months had passed before recurrence had taken place and the whole pelvic cavity was filled with the newly formed tissue. In the author's opinion it is most decidedly inadvisable to split myomatous uteri, inasmuch as they may have undergone sarcomatous degeneration. Of course this condition was not a very common one, as it had not been demonstrated in more than three per cent., but this amount was sufficient to warn the operator against splitting the uterus and rendering the patient liable to subsequent return of sarcomatous tumors. In every case of hysteromyomectomy it will be advisable to have an asistant open the uterus immediately upon its removal to determine if carcinoma of the body exists or to find out whether the myoma had become sarcomatous. If malignancy was detected the cervix can thus be removed without delay.

Dr. Clark, in discussing this paper, thought that it evidenced an increase in the indication for radical treatment in myomata. He did not know how far one dared to preserve the uterus now that Dr. Cullen's work had been done.

Dr. Dunning said that the work of the speaker merited much commendation both for the thoroughness with which it had been done and because it showed that the present idea of the harmlessness of myomata was radically incorrect. He would like to know in what percentage of cases Dr. Cullen had found sarcomatous degeneration of myoma to be present.

Dr. Cullen said, in closing the discussion, that the exact percentage was not known, but thought it was between one and a half and two per cent. Early operation on myomata was advocated because of the present knowledge of the possibility of a sarcomatous degeneration. That the condition of the tube as to whether it had been inflamed or not was an important point to notice in myomata. Where the tube was not patent it was possible that myomectomy was contraindicated and complete ablation of the uterus should be practised.

Ectopic Gestation.—Dr. O. G. Pfaff, of Indianapolis, said that although many cases had been assigned for the presence of an extra-uterine pregnancy there is still another which, in his opinion, is worthy of serious consideration. Great many cases of tubal pregnancy have occrred where there had been previous infection of the tubes, but in a few others no previous infection had existed. A possible factor in the causation of tubal pregnancy might result from the loss of the peristaltic function of the tube in carrying the ovum from the ovary to the uterine cavity and by loss of this function the ovum would be arrested in the tube and there become impregnated. The tube was in reality an excretory canal just the same as the ureter and gall-ducts, both of which possess the power of peristalsis. The ciliated epithelium of the tube did not always possess the property of sending forward the ovum on its journey to the uterine cavity; that it was perhaps simply a velvety bed on which the ovum might lie while it was carried forward to the uterus by the peristaltic action of the tube. In a case of the author's where the tube had become bound down peristalsis could not take place during ovulation and had a tubal pregnancy resulted.

Dr. J. H. Carstens, of Detroit, said that one of nature's methods to prevent tubal abortion was to cause adhesions of the tube to the rectum bladder and pelvic wall so that it was impossible for the contents of the impregnated tube to escape into the abdominal cavity. This speaker did not put much faith in the peristaltic action of the tube as a factor in tubal pregnancy but thought it was worthy of further investigation; that usually writers had ascribed as the cause of tubal pregnancy some malformation in the tube which obstructs the passage of the ovum into the uterine cavity.

Dr. Wagner, of St. Louis, said that the ordinary cause of uterine pregnancy was now commonly laid down to the presence of secondary fimbria or diverticuli.

Dr. Dudley remarked that it was known that many women have become pregnant when the tube was bound down by adhesions. That the cilia played a more important part than was at present conceded to it. The dynamic force of the diaphragm plays an important rôle in the movement of the ovum from the ovary to the uterus.

Dr. Pfaff said, in closing, that tubal pregnancy may take place also in uncomplicated, healthy tubes.

Non-Absorbent Gauze the Proper Material for Tamponage in Uterine Hemorrhage.—Dr. R. W. Holmes, of Chicago, presented this paper. The original gauze of Lister was non-absorbent, but somehow or other it had fallen into disuse and disfavor so that today almost every obstetrician had discarded it for the absorbent variety for packing the uteri in post-partum hemorrhage. The capillarity of non-absorbent gauze was one sixth with water as that of absorbent gauze. Various substances, such as gelatin, paraffin, celloidin, were used to render gauze non-absorbent. Paraffin, when used in this way, delayed coagulation, hence gauze prepared with it was of little value for the purpose under consideration. The writer had used gelatine gauze on several occasions with perfectly satisfactory results. Any styptic substance might be incorporated in the gauze provided it would not undergo a change when coming in contact with the antiseptic substance which was used to sterilize the gauze.

Dr. C. S. Bacon, of Chicago, held that absorbent and not non-absorbent gauze was capable of permitting drainage. If drainage were desired some sort of wicking should be employed. The important point was not whether the gauze was absorbent or non-absorbent but was the impregnation of the gauze with the hemostatic. The fundamental object in the treatment of post-partum hemorrhage was the stimulation of the uterine contraction and coagulation of the blood.

Dr. W. P. Manton, of Detroit, said that for many years he had used an absorbent gauze and that it had in every instance answered every purpose because it permitted absorption of blood into its meshes and thereby assisted in the coagulation of the blood in the uterine veins and arteries.

Dr. Effie Davis, of Chicago, thought that in almost every instance the trouble lay not in the treatment of post-partum hemorrhage but in neglect of a proper prophylaxis.

Dr. Holmes said that the discussion had gone wide of the mark, in that it was not a question in his paper as to the prevention of post-partum hemorrhage but rather that a suitable non-absorbent gauze might be found to check the post-partum hemorrhage after it had begun.

Acute General Staphylococcic Infection Through the Puerperal Breast.—Dr. W. P. Manton, of Detroit, said a careful search of literature had failed to reveal a single case similar to that which the author here recorded. The author realized that the modern practitioner was fully aware of the necessity of a proper antiseptic precaution in the treatment by massage of cases of engorged breasts. Normally human milk contained pus-forming organism. The object of the author's paper was to call the attention of the profession to the possibility of a general infection resulting from improper massage of the breasts after delivery, especially where the diagnosis had not previously been made between simple physiological turgescence and a beginning infection of the breasts. In the author's case abscess formation had taken place not only in the breast but shortly after these had appeared metastatic abscesses had appeared on the back, side and extremities of the patient. Reports from cultures taken from the uterine cavity were negative in two instances. An examination of the blood for the presence of bacteria was positive. Distention and turgescence of the breast caused no trouble in the larger majority of cases and could easily be treated by means other than massage. Where massage was employed it should be done with the utmost care and precaution and gentleness.

Dr. R. A. Jaimeson, of Detroit, said that in a very large experience extending over many years he had never seen a similar case.

Dr. Bacon insisted that a proper diagnosis could be made between beginning lactation and infection. The latter should not be difficult because temperature was almost invariably present along with the other signs and symptoms of the beginning sepsis. Massage of the breast was not necessary in the majority of cases. That the methods of massage taught and advocated in textbooks and by teachers, were totally in variance with the massage employed in other portions of the body. In using this procedure the massage should be done away from the breast toward the axillary and subclavian vessel; that he could reduce the turgescence in a breast without removing from it more than a few drops of milk.

Dr. Manton said, in closing, that general infection would be found to be much more common than was generally supposed.

Technic of Cataphoric Sterilization in Cancer of the Cervix Uteri.—Dr. G. B. Massey, of Philadelphia, said a large proportion of failures were due to the improper use of the knife in these cases because through careless handling of the tissues secondary deposits were caused in the cut edges of the wound. This could be easily prevented by the employment of the thermocautery and other scarifying knives. Of late he had been experimenting with a new electrical method to produce cataphoresis into the tissue of the nascent salt of mercury. Ordinarily in a cervical cancer of average size the employment of five to six hundred milleampères is sufficient to destroy the growth after a period of exposure varying in time from a half hour to an hour or more. Even though the tissue may not be totally rid the invading cancer cells, there would be an alleviation of the pain, discomfort and odor. The slough which was caused by the cauterizing knife usually came away after ten days or two weeks. He had now come to the conclusion that he could obtain much better results by the combination of the salts of mercury and zinc and had discarded the electrode of gold covered with mercury, as the mercury was too rapidly absorbed in the presence of the gold metal.

Dr. Hayden, of Indiana, said that he felt sure that a great many of the so-called inoperable cases would be much benefited by this procedure and that he wondered why after so many years of intelligent work Dr. Massey's investigations had not received more attention by the profession at large.

Dr. Moody, of Alabama, acquiesced in the statements of the latter gentleman and said that he had tried it in three cases without success, but thought that his failures might have been due to improper technic, that he had decided in view of his many failures to cure this condition, by the cutting operation, to give Dr. Massey's method further trial. Anyhow, he was assured that the symptoms would be markedly relieved by the use of this method.

Dr. Massey, in closing, said that he had had but one absolute success by this method, although he had tried it in seven cases, the six unsuccessful cases were recurrent cancers, many of which he had relieved of pain and the disagreeable odor so common with them. One case which he had treated succumbed after six days to septic peritonitis.

Exploratory Vaginal Puncture and Celiotomy in the Diagnosis of Diseases of Female Genital Organs.—Dr. C. V. Theinhaus, of Milwaukee, said very many patients came to the practitioner in whom the exact diagnosis was doubtful even after an examination had been made. There were two varieties of cases presenting tumors, one where the tumor was hard, the other, where the tumor was soft. The solid tumors

were either fibroids or malignant growths. In the soft variety diagnosis had to be made between long standing accumulation of pus, cysts, and extra-uterine pregnancy. Of course where there was pus one might have a slight rise of temperature in the afternoon. In every case where the diagnosis was doubtful exploratory vaginal puncture should be done. Operations of this kind were first reported by Dr. Summers, of New York.

Dr. Stacey, of Texas, thought that the procedure was a very helpful one and could be of great service to the occasional operator who was not always prepared to do a major operation on the spur of the moment.

Dr. Craig, of Boston, said that the occasional operator was not justified in undertaking an operation where it was possible for him to secure the services of the surgeon who was continually operating; that if the pus was deep-seated he doubted the advisability of doing a vaginal drainage but thought that abdominal drainage was here clearly indicated.

Dr. Theinhaus said, in closing, that surgeons had long since come to the conclusion that it was worse than foolhardy to atempt to drain pus through the abdominal wall. Vaginal drainage should always be employed.

Conservative Surgery of the Sclerotic Ovary.—Dr. H. O. Pantzer, of Indianapolis, said the profession had long since determined that sclerotic ovaries should be removed, but he was convinced that many of the subjective symptoms might be relieved by the employment of conservatism. He reported a case of sclerotic ovaries where there was a seeming sterility after marital relations had existed for several years. The speaker had removed one ovary and had done a plastic operation upon the other with the result that after something over two years the patient had become pregnant, gone on to full term, and had been delivered of a nine-pound child.

(To be Continued.)

CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

Held at Washington, D. C., May 12 to 14, 1903.

(Continued from Page 948.)

SECOND GENERAL SESSION—MAY 13TH.

The President of the Congress, W. W. Keen, M.D., of Philadelphia, in the Chair.

Diagnosis of Diseases of the Biliary Tract.—Dr. John H. Musser, of Philadelphia, said that diseases of the biliary passages had passed through nearly the same phases of medical and surgical history in recent years as the appendix. As for the appendix, it is now realized that the important thing is diagnosis of serious pathological conditions as early as possible and operation as soon as they are recognized, depending, of course, on the acuity of symptoms in the general condition. Physicians as a rule do not see the primary effects of affections of the biliary passages, but the secondary complications, hence the difficulty of diagnosis. The primary pathological conditions are due to gall-stones, inflammatory conditions and parasites. Dr. Musser would enter a plea for the early recognition of primary states of the gall-tract and careful revision of the diagnosis after the first acute symptoms have passed with the idea of obtaining assurance. For this diagnosis laboratory methods are of great importance.

Significance of Ordinary Symptoms.—If after several weeks a patient is still suffering from jaundice, for which no good reason can be ascertained, then observation must be carefully made for a time and followed by exploratory laparotomy rather than allow the condition to become inveterate. Simple catarrhal cholangitis is becoming ever a rarer diagnosis because physicians recognize that affections of the biliary passages are usually due to infections. Needless to say an infective process must always be watched carefully. True suppurative cholangitis is always accompanied by fever, not with the regular curve, but of angular and sudden character. There is usually a history of preceding gall-stones or of parasites. Boas's point of tenderness must not be forgotten, that is, with abscess in the gall-bladder there is a tender spot in the neighborhood of the twelfth dorsal vertebra. This observation of the German clinician has been confirmed by Dr. Musser.

Cholecystitis.—This may be due to acute catarrh, but may come on very sudden, with severe pains, nausea and prostration, especially after exposure or excess in eating and drinking. Dr. Musser has recently had a case in which operation was necessary on the fourth day, in which there were no gall-stones and no pus, but only great inflammatory edema of the gall-bladder, and the presence in it of a very acrid irritant fluid which caused the severe toxemia. Despite the absence of jaundice the symptoms were very intense and operation was evidently needed. The tension on the gall-bladder might easily have resulted in pressure, ulceration with perforation and general peritonitis.

Differential Diagnosis.—The important symptom of gall-bladder disease is pain and tenderness in the right upper quadrant of the abdomen. There are certain other conditions that must be remembered, however, in order to get a definite appreciation of the significance of this symptom. Subdiaphragmatic abscess may cause similar symptoms, as may also pleurisy and at times pneumonia when it presents abdominal symptoms. One of the things that must be remembered in this regard is appendicitis. Occasionally when the end of the appendix points toward the liver, it may, in inflammatory conditions, form adhesions to the gall-bladder or may be the origin of an abscess in this region. As both biliary conditions and appendicitis require operation a mistake is not important. In certain cases uremia may simulate an attack of inflammation in the biliary region because of tenderness of the kidney. This is not generally known and may give rise to even fatal advice as regards operation.

Progress of Gall-bladder Surgery.—Dr. George E. Brewer, of New York, said that the present genera tion of surgeons has passed through three stages of gall-stone surgery. First, neglect; second, operations for late sequelæ of the disease, and third, the present stage of radical and really curative operations as early as possible in the case in order to avoid secondary complications. Operations on the female pelvis on the kidney and on the appendix have passed through the same stages. Early diagnosis is the most important element in the case. The symptoms may, however, be but very slight. Gall-stones, for instance, present no symptoms in about 90 per cent. of the cases, but may at almost any time light up an inflammatory process that will cause anything from slight jaundice to fatal perforative peritonitis. Occasionally gall-stones may be felt to grate beneath the fingers on careful palpation. Dr. Brewer once felt a very large stone through a very lax abdominal wall. The discomfort due to the presence of gall-stones, it must be remembered, is often called gastralgia.

Differential Elements.—Acute paroxysmal pains in the right upper part of the abdomen will, in 97 cases out of 100, be due to gall-stones. In two of the cases the cause will be ulcer of the stomach and in one spasm of the pylorus. Jaundice is the most frequent symptom of gall-stones. It may be produced without pain. It may be intermittent, yet due to the presence of a stone which, becoming impacted at the papilla, causes enlargement of the ducts behind it, and then is some-

times floated up allowing the escape of bile and sometimes drops back, closing the opening once more. The pain is important, especially if it occurs in the upper right epigastric region, when the patient is fasting, and if it comes on at night and is distinguished by a distinct tender point. Tumor is an important symptom, but is much rarer. A tense gall-bladder may cause a very hard feeling without there necessarily being any malignant disease. Gall-stones, it must be remembered, are rare under twenty years of age. With regard to the fever that so often accompanies gall-stones the most important thing is the angularity of the fever curve.

Lymph Gland Enlargement and Jaundice.—Dr. Brewer said that there are three lymph glands situated at various points between the gall-bladder and the termination of the common duct, the enlargement of which may cause jaundice and other symptoms simulating stone. These three lymph nodes may become enlarged as the result of cancer in neighboring regions, and in this case the symptoms due to them are not likely to be relieved. They may become enlarged, however, from infectious diseases and relief be afforded after the passage of the infection. Dr. Brewer recently saw a case of Hodgkin's disease in which the enlargement of these nodes was thought to be due to cancer and caused all the symptoms of malignant stoppage of the bile passages.

Bacterial Origin of Gall-stones.—Dr. C. A. Herter, of New York, said that it is now generally admitted that gall-stones are of bacterial origin. They are composed of two principal materials, cholesterin and bilirubin. Cholesterin is a monatomic alcohol forming one-tenth of one per cent. of the bile. It is derived from the blood and was thought to be increased by inspissation of the bile. This viscidity is now known to be due to mucous. Cholesterin is really a product of the epithelial cells of the gall-bladder, and is actually increased during the stay of bile in that viscus. In health not much cholesterin is secreted, but in disease there is an increase in this function. This may be very significant in the production of gall-stones. Herter tried experimentally to increase the cholesterin by producing irritations of the gall-bladder. Bichloride of mercury, carbolic acid and ricin did cause a very large increase of cholesterin in the bile. Abrin and diphtheria toxin produce no such results, however.

Blood Origin of Cholesterin.—During the resolution of pneumonia, because of hemolytic processes, there is more cholesterin present in the blood and more can be found in the bile. If cholesterin is directly injected into the economy, however, no such increase in the substance in the bile can be found. Naunyn argues that the cholesterin of the blood has no effect on bile cholesterin. The calcium salts are important in the bile. If calcium is deficient bilirubin is precipitated and, as is well known, this often forms a nucleus for gall-stones. Layers of cholesterin being deposited around the bilirubin nucleus. It is now well known that colon and typhoid bacilli are often found in gall-stones. Welch showed that streptococci and colon bacilli were often in the centers of gall-stones. Gall-stones have been produced artificially by the injection of microbes into the gall-bladders of animals. Gilbert and Mignot showed that for this purpose the microbes introduced must not be too virulent, that is, attenuated cultures must be used and they must be kept in the gall-bladder. The main protective feature of the gall-bladder is the possibility of emptying itself readily, which takes out of it foreign products.

Constitutional Origin of Gall-stones.—Dr. Herter has proved in his laboratory by experiments on dogs that gall-stones, at least of small size, may be produced by bringing about changes in the metabolism of the animals by unsuitable food. If an almost exclusive diet of fats be given to dogs with very little proteid material, minute masses of bilirubin calcium are deposited in the gall-bladder, these might well form the basis of true gall-stone formation. These experiments are worth following up. So far microbes have been made to play perhaps too important a rôle in gall-stone formation and now the constitutional condition must come in for its share of study in their etiology.

Gall-stones and Stomach Diseases.—Professor Ewald, of Berlin, Germany, discusses the diseases of the gall-bladder and the bile duct with special reference to diseases of the stomach and intestines. He said that many infections of the intestines particularly are known to invade the gall-bladder. Chiari showed that in 20 typhoid fever cases that came to autopsy 19 had typhoid bacilli in their gall-bladders. Welch showed that bacteria from the blood as well as from the intestine might invade the gall-gladder and cause gall-stone formation. Other irritants are not likely to encourage the formation of gall-stones as cirrhosis of the liver, due to alcohol, is not usually associated with gall-stones. Certain symptoms of stomach and intestinal diseases are similar to those of the biliary tract. Among these colic is one of the most important. Biliary colic is due to contraction and spasm of the bile duct. Inflammatory swelling causes burning continuous pain but not spasmodic pain.

Differential Diagnosis.—The important symptoms of gall-stone disease are colic icterus and tumor. These are seldom all in the one case. Tenderness pain and even swelling may occur in connection with attacks of appendicitis and the tip of the appendix is in the liver region. Painful affections of the stomach and pancreas are hard to differentiate. Chemical examination of the stomach contents is often of great help. Ulcer of the stomach is not unlikely to be mistaken for gall-stones and hyperacidity and an increase of hydrochloric acid speaks rather for gastric ulcer. Pancreatic disease is likely to be associated with glycosuria, fatty stools and the presence of muscular fibers. Tumor is more frequently absent than present and does not occur in more than 15 per cent. of the cases. The gall-bladder contracts about the stone instead of becoming distended. Aspiration for diagnostic purposes is dangerous and may lead to infection of the peritoneum. It should not be undertaken unless the patient is ready for operation.

Experience in Gall-bladder Surgery.—Dr. William J. Mayo related the results of his experience in 534 operations upon the biliary passages. He insisted on the necessity for operation as early as possible after the first acute symptoms have subsided. In advanced cases, adhesions, infections and other pathological conditions have developed. At times it is necessary to operate several times and in these cases the prognosis of repeated operations is rather good. In fourteen cases patients were cured by a second operation and in two cases the symptoms were entirely relieved only after several operations. Dr. Mayo uses a catgut drain which is absorbed before it is necessary to take it out and thus prevents the tendency to weakness of the abdominal wall at this point that may be followed by rupture. In patients who have suffered for a long time from jaundice and whose blood shows an absence of tendency to coagulation the calcium salts are given very freely for a week before operation.

Prognosis of Malignant Growths.—Malignant neoplasms of the biliary passages were found in 24 cases. There were four of these in the gall-bladder for every one in the duct. In five operation was deemed advisable, even though portions of the liver had to be removed with the cancer. Three of these patients are

alive, one of them for more than two years, though unfortunately there is a local recurrence which will probably soon lead to a fatal termination. It is evident that these cases of malignant disease in the biliary tract are not so hopeless as has been thought.

Surgery of the Common Bile Duct for Stone or Tumor.—Professor Hans Kehr, of Halberstadt, Germany, said that his experience with 800 laparotomies for biliary disease had given him a certain right to speak on this subject and yet he felt the limitations of his knowledge and was glad to think that he had the advantage of hearing the opinions of Americans, since so much had been accomplished for gall-stone surgery in this country. Gall-stones are in most cases absolutely latent. When they do give symptoms not infrequently they are those of acute obstruction. For this the treatment is medical not surgical. Hot applications should be employed, vomiting should be encouraged, nature should be assisted in every way to overcome the acute condition. The stools should be carefully searched for calculi, though the passage of a calculus does not necessarily mean that others are not present to produce further symptoms. After the attack is over, even though gall-stones have been found in the stools, if no tenderness remains and if the jaundice disappears completely there is no indication for operation. Professor Kehr is not one of those who believes in the use of the knife unless there are absolute indications and though a number of such cases have been sent to him he has uniformly refused to operate, unless there has been a recurrence of symptoms.

Necessity for Operation.—Physicians need to be impressed with the idea that operations should be done early in these cases. If they are allowed to progress with recurring attacks, though each attack may not be very severe, or at least not appear dangerous, complications are constantly developing. Spontaneous cure is not impossible but it is very rare and should not be waited for. Cure is capricious and much more dangerous than operation. Dr. Kehr has lost less than 3 per cent. of his cases where there was no pus and no cancer. As 80 per cent. of these cases, when left untreated, succumb to their biliary affections sooner or later, even a much higher mortality would still justify operation.

Masking of Symptoms.—Patients suffering from gall-stones in Europe are usually sent to Carlsbad. Here the symptoms are relieved though the stone is not washed out. The inflammation is reduced and the pain ceases for a time. This has tempted many patients to keep putting off operation. After the first acute attack, if there is a recurrence, it constitutes a strict indication for operation which must not be postponed too long. Carlsbad masks the symptoms of gall-stones somewhat as morphine does those of appendicitis.

Choledochtripsy.—Professor Kehr does not believe in the fragmentation of stones within the duct by crushing or by needling. The fragments thus created may not pass through the orifice; all of them may not be carried out, recurrences are frequent, injuries to the tissues are likely. Whether voluntary or accidental, the crushing of the stones should be avoided. If a sufficiently large incision is made it is possible to get through the adhesions and perform the operation at one sitting. Dr. Kehr cannot imagine conditions in which two sittings would be necessary. When the stone is at the papilla, papillotomy through duodenostomy may be necessary. At times it may be necessary to go through pancreatic tissue. Packing is important in these wounds. To close without packing means a much higher mortality. If a carcinoma of the duct exists and is small, a radical operation should be done. The internal medicine men should go to school to the surgeon in this matter. If recurrence is found after the first attack, a surgeon must be appealed to.

In opening the discussion, Dr. Frank Billings, of Chicago, said that the pain of gall-stones is not necessarily severe and that for this reason cases are sometimes mistaken. As a rule, however, there is a distinct tenderness on manipulation and this is reflected toward the epigastrium. In one case operated upon for supposed gall-stones the condition proved to be the gastric crises of locomotor ataxia. Floating kidney may occasionally give pain and tenderness simulating gall-stones, especially when accompanied by nausea. As a rule gall-stones give no symptoms until infection has taken place. As soon as the diagnosis of gall-stones is made, the case becomes surgical and not medical.

Dr. Dock said that it is very easy for the medical man to be culpably negligent in these cases by not sending his patients to a surgeon. Unfortunately many of them will not go. The diagnosis is not always easy. In the case under Dr. Dock's care, in which there was dilatation of the stomach with severe pain in the epigastrium, an ulcer was suspected. A gall-stone came up in the washings from the stomach though there had never been any pain, or nausea, or tenderness pointing to the existence of gall-stones in the history.

Nature's Protective Mechanism.—Dr. Sewall said that bile is a continuous secretion and if the flow of bile were simply stopped by the papilla the stagnant bile would invite the presence of microbes. The function of the gall-bladder seems to be to expel bile every now and then so as to keep the bile sterile. This is one part of the protective mechanism, another is that the natural salts of the bile dissolve cholesterin, and so prevent the formation of gall-stones.

Dr. E. J. Janeway, of New York, said that the doctor must not permit himself to judge too easily of the presence of bile in the stools merely from their color. In one case that he had seen in consultation the stools were said to contain bile because they were green, when as a matter of fact this color was due to spinach which the patient had been eating very freely.

Dr. Moynihan, of Leeds, England, said that he considered that the most informing afternoons of his life had occurred during these last few days while listening to the discussions on pancreatic and biliary diseases. He was not sure which of the occasions he would remember with the greatest pleasure. He said that in England the custom is to make a free incision not only perpendicularly, but also along the costal margin, so that the common duct can be made straight by pulling a portion of the liver out and this duct may also be brought on a level with the skin. In this way operations which used to take an hour may now be done in twenty to thirty minutes.

AMERICAN GYNECOLOGICAL SOCIETY.

Twenty-eighth Annual Meeting, held in Washington, D. C., May 12 to 14, 1903.

FIRST DAY—MAY 12TH.

President Joseph E. Janvrin, M.D., of New York City, in the Chair.

Address of Welcome.—An address of welcome was delivered by Dr. I. S. Stone, of Washington, D. C., which was responded to by the President.

What Shall Be the Treatment in Cases of Pregnancy Complicated by Fibroid Tumor?—There was a symposium on this subject, in which the first paper was read by Dr. Henry C. Coe, of New York City. He stated that fibroid tumors complicated pregnancy because they interfered with the normal development of

the pregnant uterus. They caused distressing symptoms, and jeopardized the life of the fetus or of the mother. Each case must be studied separately, and the decision as to the treatment would vary with the patient, the tumor, the experience, and bias of the surgeon. He spoke of the influence of the tumor on pregnancy, and of pregnancy on the tumor—increased growth, degenerative changes, environment, etc. He mentioned three "periods" of pregnancy: (1) Up to the fourth month. In this stage he advised to empty the uterus in the case of large interstitial or broad ligament tumors, or where they are situated in the lower uterine segment. Small tumors might be enucleated per vaginam; or enucleation should be done by the abdominal route. Subperitoneal pedunculated growths should be removed, and impacted growths should be liberated under anesthesia, when no adhesions are present, and should be kept out of the pelvic cavity until they are kept out of the way by the growing uterus. The wishes of the patient should be followed so far as this can be done with safety. (2) Fourth to seventh month. Pain and pressure symptoms furnished indications for treatment. In the case of large interstitial growths the uterus might be emptied, although the danger of hemorrhage from such a course was greater. He advised enucleation by the abdominal route, but the patient should be kept under observation. Impacted tumors, pressing on the bladder, bowel, ureter, twisted pedicle, degeneration of the tumor, disease of the adnexa, peritonitis, etc., might require interference without reference to pregnancy. (3) After sixth month.—Viability of the fetus should be obtained, if the life of the mother was not actually jeopardized. Can the woman be delivered at term? Yes, with subperitoneal growths, if they were not too large and favorably situated, or with small interstitial fibroids, if they were not in the lower uterine segment. After the eighth month the Porro-Cesarean operation, suprapubic amputation, or hysterectomy, should be performed.

Myomectomy or Hysterectomy.—Dr. Joseph Taber Johnson, of Washington, D. C., said the treatment depended upon the size, variety and location of the tumor, and the size of the pregnancy. Myomectomy in favorable cases should be the operation of election. However, cases would occasionally present themselves with such urgent symptoms as to require supravaginal hysterectomy as a life-saving operation. He described briefly successful operations of both varieties.

Pregnancy and Labor Complicated by Myomata.—Dr. Geo. Tucker Harrison, of New York City, stated that no general rules can be laid down with reference to the treatment, as each case must be carefully studied in all its circumstances before recourse was had to operative intervention. The dangers of this complication of pregnancy as a cause of dystocia were formerly overestimated. The plan of treatment, during pregnancy, as a rule, was an expectant one.

Dr. Edward Reynolds, of Boston, spoke of the treatment of large incarcerated fibroids, at or near term, in advance of the fetal head. He had seen ten such cases. No one of these tumors was smaller than the seventh month fetal head. In each instance the woman was delivered either normally or by forceps.

Dr. J. Duncan Emmet, of New York City, said there was no question but that certain myomata must be removed either by myomectomy or by the radical removal of the uterus; while there were other cases in which the tumors did not interfere with the course of pregnancy. He was glad one of the essayists had emphasized a preference for myomectomy rather than the removal of the uterus, as the latter was such a serious procedure in its after effects.

Dr. William R. Pryor, of New York City, expressed himself in favor of conservatism in the treatment of fibroids associated with or complicating pregnancy.

Dr. Henry D. Fry, of Washington, in referring to Dr. Coe's paper, spoke of emptying the uterus, saying he thought the cases were rare where this procedure was called for. The treatment was either expectant or radical. Those tumors which indicated emptying the uterus were necessarily located in the lower uterine segment, and yet some of these occasionally rose in the pelvis and gave very little or no trouble.

Dr. Walter P. Manton, of Detroit, Mich., looked upon cases of fibroid tumors complicating pregnancy as very rare. Personally he had seen but six out of five or six thousand cases of labor in private and hospital practice.

Dr. Reuben Peterson, of Ann Arbor, Mich., spoke of a case on which he had operated, the fibroid tumor being located in the lower uterine segment, and was of the interstitial variety. He did a myomectomy, enucleated the tumor, the woman went on to full term, and was delivered of a child.

Dr. Geo. J. Engelmann, of Boston, had twice seen the disappearance of a fibroid following confinement.

Combined Bisection of Tumors and Uterus with Enucleation of the Former in Abdominal Hysterectomy for Large Fibroid Tumors.—Dr. Geo. H. Noble, of Atlanta, Ga., said in case of large fibroid tumors in the body of the uterus, the author recommended bisecting the tumor and the uterus, and then enucleating the tumor. In intraligamentous tumors the uterus should be bisected, the capsule of the tumor penetrated from the cavity of the uterus, and the tumor enucleated from its capsule. The advantages of this method were: saving of time; prevention of hemorrhage; increased working space; easy manipulation; accessibility to the blood supply in the deep pelvis, and freedom from liability of injury to the ureters and uterine arteries.

Relation of Gynecological and Nervous Affections.—Dr. Chauncey D. Palmer, of Cincinnati, in a paper on this subject discussed this relationship from two standpoints: (1) What influence do female pelvic diseases have in the induction of nervous disorders? (2) What affections of the female pelvic organs arise from nervous derangements? At the start, he ruled out any thought of the occurrence of any organic, so-called structural, lesions of the nervous system, as resulting, unless indirectly and quite remotely, from pelvic diseases. The morbid changes then to which reference was made were hysteria, neurasthenia, neuralgia, chorea, epilepsy, hystero-epilepsy, certain paralyses, migraine, convulsions of certain kind, including tetanus; also mental aberrations, and vasomotor changes. While many hysterical women had no anomaly of the sexual organs, it must be said that a certain proportion of them did have some imperfection in the development of their sexual apparatus, especially the uterus. Hence the justifiability of an oophorectomy in some such cases. Should the sexual organs be diseased in hysterical women, one could not say that the hysteria was secondary. Even then psychical causes were at work, more potent than the local disease. Cases of insanity having been promptly relieved by gynecological operations; likewise it had immediately followed them. Such sequelæ, then noticed, were probably more common than after other operations. In the treatment of women for the special diseases of their sex, there was too much of a tendency to place undue stress on real or supposed lesions of her reproductive organs. This was particularly true in reference to some so-called ovarian affections. Gynecology of to-day would not amount to much without an appropriate surgery, but indiscreet surgery, like overmedication, is abused.

(To be Continued.)

BOOK REVIEWS.

THE INTERNATIONAL MEDICAL ANNUAL, a year book of Treatment and Practitioner's Index. 1903. Twenty-first Year. E. B. Treat & Co., New York and Chicago.

THE International Medical Annual is the most condensed review of the medicine and surgery of the year that appears. Notwithstanding the condensation, however, the citations of articles are excellently done and there is always sufficient material provided to enable the reader to form a good idea of progress in special branches. The selections are excellently made and the Year Book is without doubt one of the most valuable of the year books. Some things are missed necessarily, but the practitioner with limited time on his hands who wants practical material will find it here in short space.

TRANSACTIONS OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION. Vol. 18, 1902.

SPECIALISTS in pulmonary diseases know that the yearly volume of the Climatological Association Transactions always contains some interesting, practical material. The present volume is no exception to the rule. Dr. E. H. de Schweinitz's article on Some Comparative Studies of the Tubercle Bacillus and Their Importance in Relation to Tuberculosis in Man deserves careful reading by all those who are especially interested in the course of tuberculosis. Dr. J. O. Cobb's discussion of the reasons for the localizations of tuberculosis in the apices of the lungs while without exception all other infectious processes begin in the dependent portions is a suggestive résumé of an old but ever new subject. The various climates of California, of Colorado, of Arizona and of different parts of Canada are discussed in such a way as to give helpful information to those who may wish to give specific directions to tuberculous patients seeking a favorable climate. These are but a few of the excellent articles.

THE PRACTICE OF SURGERY. A Treatise on Surgery for the Use of Practitioners and Students. By HENRY R. WHARTON, M.D., Clinical Professor of Surgery, Women's Medical College of Pennsylvania; Surgeon to the Presbyterian and the Children's Hospitals, etc., and B. FARQUHAR CURTIS, M.D., Professor of Clinical Surgery and adjunct Professor of the Principles of Surgery in the University and Bellevue Medical College of New York; Surgeon to St. Luke's Hospital, Bellevue Hospital and the Memorial Hospital, etc. Profusely illustrated. Third Edition. J. B. Lippincott Company. Philadelphia and London.

IN its present edition this popular handbook has again been brought completely into accord with the ever shifting tenets of the surgery of to-day. To one who surveys the unceasing stream of Grub Street literature which is constantly pouring from the presses and binderies of our medical publishers it is a great pleasure to meet again such a volume as the present, which, well rounded and complete, concise yet adequate, authoritative without bumptiousness, fulfils its mission with a simple straightforwardness and singleness of purpose that disarms all criticism. Just what the aim of the authors has been may best be gathered from a passage of the preface which states that the essential information necessary for a general practitioner or student to carry on or begin the practice of surgery comprises (1) a description of the various injuries and surgical diseases sufficiently full to enable the practitioner to recognize them when met with in practical work; (2) full directions for the treatment of such injuries and diseases as would usually be attended by the general practitioner; (3) a sketch of the treatment of the more difficult conditions, such as would allow the practitioner to advise patients intelligently in obtaining special skilled surgical attention; (4) an outline of the accepted facts and theories of the etiology and pathology of the various surgical affections sufficient to form a foundation for the clinical picture and give directions for the treatment. This citation is made merely that it may be followed by the statement that in every particular these selfmade requirements have been most rigidly fulfilled and the authors deserve most unqualified admiration for the judgment they have used in the apportionment of space and the method of handling the various topics. It was Talleyrand who apologized for sending a voluminous letter on the ground that he had no time to compose a short one and it no doubt took infinitely more labor to compress so much information into the compass of a single volume than would have been the case had it been allowed to overflow into a second one.

It appears invidious to make selections for especial mention where everything is so excellent, but the chapters on fractures, the surgery of the abdomen and the surgery of the urinary organs are more than worthy of the importance of the subjects they discuss. The treatment of fractures, something so important to the general practitioner, is described with the greatest elaboration and attention to detail and many ingenious modifications of the accepted forms of dressing suggested. The chapter on abdominal surgery is truly a masterly essay on the subject and is pregnant with the results of much personal experience. The description of the operation for carcinoma of the breast is an unusually complete one and the various steps of the dissection are very clearly pointed out. The important subject of hernia also is treated in a manner to deserve especial mention, the author preferring for routine a combination of Macewen's and Bassini's operations. The illustrations throughout are of a high order of merit, notably the drawings of microscopical sections by Dr. F. C. Wood and in this edition many original wash drawings have been added.

Taken all in all, the keynote of the work is practicability and the authors' efforts to produce a work available in every respect for constant every-day use have resulted in producing what is undoubtedly the most useful book of the kind in existence.

THE MYCOLOGY OF THE MOUTH. A Text-book of Oral Bacteria. By KENNETH WELDON GOADBY, Bacteriologist and Lecturer on Bacteriology, National Dental Hospital, London, etc. Longmans, Green & Co., New York and Bombay.

OF late years the flora of the mouth has become much more important, not only for dentists but also for medical men. Some years ago it was pointed out that certain cases of anemia, and possibly even pernicious anemia, were due to the growth of various bacteria in the mouth and their being poured into the stomach in such numbers as to prevent ordinary digestive processes and cause toxemia by growing in large numbers in the intestinal tract. The present volume gives an excellent idea of the various forms of micro-organism that occur in the mouth, especially those which are known to have any pathogenic action. Those that cause such dental affections as caries of the teeth and pyorrhea alveolaris, receiving special attention. Now that the practice of staining the sputum for tubercle bacilli is so common, a little volume that readily furnishes the data by which other forms of micro-organisms may be recognized makes a handy manual of bacteriology, of service to the pulmonary specialist and also to the general practitioner.